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United States Department of Agriculture,

OFFICE OF EXPERIMENT STATIONS.

A. C. TRUE, Director.

LIST OF STATION PUBLICATIONS RECEIVED BY THE OFFICE OF EXPERIMENT STATIONS DURING JANUARY, 1912.

NOTE.—The station publications noted in this list are not distributed by the Department of Agriculture, but can usually be obtained, as far as the supply will permit, by applying to the stations issuing them.

ALABAMA COLLEGE STATION, Auburn, J. F. Duggar, Director.

Heading Off Boll-weevil Panic. By W. E. Hinds. (Bulletin 159, pp. 225-238, fig. 1.)

The present boll-weevil situation in Alabama is outlined and suggestions are given to commercial organizations with a view of inspiring their confidence in the effectiveness of methods of controlling the pest.

CALIFORNIA STATION, Berkeley, E. J. Wickson, Director.

Dosage Tables. By C. W. Woodworth. (Bulletin 220, pp. 33, pls. 2, figs. 3.)

Tables are given and discussed showing the amounts of cyanid to use, including leakage, in fumigation tents.

The Red or Orange Scale. By H. J. Quayle. (Bulletin 222, pp. III, IV+99-150, figs. 37.)

This bulletin discusses briefly the history, distribution, economic importance, and food plants of the red or orange scale (*Chrysomphalus aurantii*) and reports the results of studies on its life history and habits, together with descriptions of its more important parasites and predatory enemies. The yellow scale and its parasites are also described. A bibliography is added.

The Black Scale. By H. J. Quayle and E. W. Rust. (Bulletin 223, pp. III, IV+151-200, pls. 8, figs. 24.)

The history, distribution, economic importance, and food plants of the black scale (*Saissetia oleæ*) are briefly discussed, and the results of detailed studies on its life history and habits and its more important parasites and predaceous enemies are reported. Notes are also given on other species of unarmored scales associated with the black scale. A bibliography is added.

COLORADO STATION, Fort Collins, C. P. Gillette, Director.

Preparation of New Land for Crops. By A. Keyser. (Correspondence Circular 10, pp. 14.)

Brief suggestions for new settlers regarding methods of cultivating the different types of land in Colorado are given.

Flax Growing. By A. Keyser. (Correspondence Circular 11, pp. 8.)

Brief suggestions for growing flax under Colorado conditions are given.

CONNECTICUT STATE STATION, New Haven, E. H. Jenkins, Director.

The Leopard Moth. By W. E. Britton and G. A. Cromie. (Bulletin 169, pp. 24, pls. 8, figs. 6.)

The history and distribution of the leopard moth (*Zeuzera pyrina*) are discussed, and studies on its life history, habits, injuries, natural enemies, and methods of control are reported. A bibliography of the literature of the subject is added.

Report on Commercial Fertilizers, 1911. By E. H. Jenkins and J. P. Street. (Annual Report, 1911, pt. 1, pp. 100.)

The requirements of the State fertilizer law are briefly stated, and analyses and valuations of fertilizers inspected during the year are reported with explanations of terms used. Special articles by J. P. Street are included, as follows: A modification of the neutral permanganate method to determine the solubility of organic nitrogen, solubility of organic nitrogen of raw materials by the alkaline permanganate method, and pot experiments on nitrogen availability.

FLORIDA STATION, Gainesville, P. H. Rolfs, Director.

Diseases of Citrus Fruits. By P. H. Rolfs, H. S. Fawcett, and B. F. Floyd. (Bulletin 108, pp. 25-47, figs. 14.)

The principal diseases which affect the epidermis, peel, and interior of citrus fruits after maturity are described with methods of prevention and control.

GEORGIA STATION, Experiment, Martin V. Calvin, Director.

Variety Test of Corn and Cotton, 1911. By M. V. Calvin. (Circular 67, pp. 4.)

The yields of varieties of corn and cotton tested at the station during 1911 are given with a statement as to distribution of seed.

IDAHO STATION, Moscow, W. L. Carlyle, Director.

Weed Pests of Idaho and Methods of Eradication. By O. M. Osborne. (Bulletin 71, pp. 3-36, figs. 17.)

"This bulletin seeks to give a description and methods of eradication of some of the worst weeds which the Idaho farmer has to combat in his crop farming."

ILLINOIS STATION, Urbana, E. Davenport, Director.

Clay County Soils. By C. G. Hopkins et al. (Soil Report 1, pp. 32, pls. 2, figs. 2.)

This is a report of a soil survey, including a soil map of Clay County, Ill. The soil types of the region are described, including estimates of the plant-food content per acre based on chemical analyses, and a compilation of data as to fertilizer requirements. A discussion of soil-survey methods and general principles of soil fertility is included.

Moultrie County Soils. By C. G. Hopkins et al. (Soil Report 2, pp. 40, pl. 1, figs. 8.)

This is a report of a soil survey, including a soil map of Moultrie County, Ill. Soil types of the region are described, including estimates of the plant-food content based on chemical analyses, and a compilation of data as to fertilizer requirements. An appendix contains a discussion of soil-survey methods and general principles of soil fertility.

INDIANA STATION, Lafayette, A. Goss, Director.

Winter Steer Feeding, 1909-10 and 1910-11. By J. H. Skinner, F. G. King, and H. P. Rusk. (Bulletin 153, pp. 3-68, fig. 1.)

A continuation of steer-feeding experiments previously reported in Bulletins 129, 130, and 136 is reported, giving the results of two seasons' work to test the feeding value of corn silage as roughage, the influence of different proportions of cotton-seed meal in the ration, and the relative profits from long and short feeding periods.

KANSAS STATION, Manhattan, E. H. Webster, Director.

Registered Feeding Stuffs. (Feeding Stuffs Bulletins 17-22, pp. 4 each.)

These bulletins show the registration on the first day of each month from December, 1910, to May, 1911, inclusive.

KENTUCKY STATION, Lexington, M. A. Scovell, Director.

Concentrated Commercial Feeding Stuffs. By J. D. Turner and H. D. Spears. (Bulletin 156, pp. 63-180.)

The results of inspection of feedings stuffs, including analyses of samples collected during 1909 and 1910, are reported and discussed, with a statement of the main requirements of the State feeding stuffs law, explanations of terms used, and compiled information as to the composition, digestibility, and nutritive value of feeds.

The Dipping of Sheep for Scabies in Tobacco Dips With and Without the Addition of Flowers of Sulphur. By E. S. Good and T. R. Bryant. (Bulletin 157, pp. 183-193, pls. 2.)

Results of experiments at the Kentucky station in cooperation with this department to determine whether or not it is necessary to use sulphur with tobacco dips for the control of scabies are reported.

Twenty-second Annual Report, 1909. (Annual Report, 1909, pp. XIX+435, pls. 27, figs. 10.)

This report contains a financial statement, a review by the director of the year's work, reprints of Bulletins 139 to 146 inclusive, analyses of mineral waters, and a meteorological summary for the year.

LOUISIANA STATIONS, Baton Rouge, W. R. Dodson, Director.

The Red Rot of Sugar Cane. By C. W. Edgerton. (Bulletin 133, pp. 3-22, pls. 4.)

This is a continuation of work reported in Bulletin 120, and gives the results of studies on the characteristics and methods of infection of the red rot disease of sugar cane (*Colletotrichum falcatum*) and its effects upon sucrose content of the cane. Methods of control are described.

Commercial Feed Stuffs. By J. E. Halligan. (Feed Stuffs Report, 1910-11, pp. 133.)

The results of inspection and analyses of samples of feeding stuffs collected by the station during 1910 and 1911 are reported with explanations.

MAINE STATION, Orono, C. D. Woods, Director.

Breeding Poultry for Egg Production. By R. Pearl. (Bulletin 192, pp. 111-176, figs. 9.)

This bulletin summarizes the more important results of 13 years' experiments in breeding poultry for egg production at the Maine station, discussing especially the futility of mass selection and the importance of isolating by pedigree analysis individuals of high inheritable fecundity.

Poultry Notes, 1910. By R. Pearl. (Bulletin 193, pp. 175-200, figs. 8.)

A brief account is given of progress in poultry work at the station during 1911, including a description of a new fresh-air brooder, studies of the accuracy of trap-nest records, and notes on the abandonment of the roosting closet in curtain-front houses, as well as on the essential points regarding seasonal distribution of egg production and protective coloration brought out in technical work published during the year.

Control of the Blackleg or Black-stem Disease of the Potato. By W. J. Morse. (Bulletin 194, pp. 199-228, pl. 1.)

The results of cooperative field experiments with growers in the control of blackleg of potatoes by formaldehyde treatment and by seed selection are reported and discussed.

MASSACHUSETTS STATION, Amherst, W. P. Brooks, Director.

Diseases of the Tomato. By G. E. Stone. (Bulletin 138, pp. 32, figs. 9.)

This bulletin summarizes the results of several years' observations and experiments, especially on blossom-end rot of tomatoes, but also on timber rot (*Sclerotinia*), tomato scab (*Cladosporium*), sleeping disease or wilt (*Fusarium*), downy mildew (*Phytophthora*), anthracnose (*Colletorichum*), leaf blight (*Cylindrosporium*), leaf blight (*Septoria*), leaf mold (*Alternaria*), blight (*Bacillus*), eel worms (*Heterodera*), and surface mold. Methods of treatment applicable to both outdoor and greenhouse culture are described.

Meteorological Observations. By J. E. Ostrander and R. N. Hallowell. (Meteorological Bulletin 275, pp. 4.)

This is a summary for November, 1911.

Meteorological Observations. By J. E. Ostrander and R. N. Hallowell. (Meteorological Bulletin 276, pp. 4.)

Summaries for December and for the year 1911 are given.

MINNESOTA STATION, University Farm, St. Paul, A. F. Woods, Director.

Eighteenth Annual Report, 1910. (Annual Report, 1910, pp. XXXVI+175+8+X, pls. 3, figs. 25.)

This contains a financial statement, report by the director reviewing the year's work of the station, and reprints of Bulletins 117 to 120, inclusive.

MISSOURI FRUIT STATION, Mountain Grove, P. Evans, Director.

Spray Calendar. By F. W. Faurot. (Circular 5, pp. 6.)

Brief directions for preparing and applying sprays for the control of insects and diseases of apples and of stone fruits under Missouri conditions are given.

Biennial Report, 1909-10. (Biennial Report, 1909-10, pp. 12, pls. 2.)

This contains a financial statement and report of the director reviewing the work of the station during 1909 and 1910.

NEVADA STATION, Reno, J. E. Stubbs, Director.

Saccharin in Food. (Circular 12, p. 1.)

Notice is given that, in accordance with the decision of the referee board of this department, the use of saccharin in food is prohibited under the Nevada food and drugs act after July 1, 1911.

NEW YORK CORNELL STATION, Ithaca, L. H. Bailey, Director.

Classification of the Peony. By L. D. Batchelor. (Bulletin 306, pp. 53-159, pls. 4.)

This report on peony classification is based on a continuation of work previously reported in Bulletins 259 and 278. The bulletin describes a large number of varieties of peonies and gives a list of desirable varieties for cut flowers and landscape or border planting. An index of this and previous bulletins is added.

An Apple Orchard Survey of Ontario County. By H. M. Martin. (Bulletin 307, pp. 163-215, pls. 7, figs. 2.)

The survey here reported was made in 1908 to obtain an estimate of the conditions of the orchards and information concerning methods and practices of orchard management in use, with a view to their improvement. A discussion of statistical methods as applied to orchard surveys, with a bibliography, is given in an appendix.

The Plum Leaf Miner. By C. R. Crosby. (Bulletin 308, pp. 219-227, figs. 14.)

Studies on the life history of the plum leaf miner (*Nepticula slingerlandella*) and its injuries are reported, including the results of spraying and clean cultivation tests for its control.

OHIO STATION, Wooster, C. E. Thorne, Director.

Calendar for the Treatment of Plant Diseases and Insect Pests. By W. J. Green, A. D. Selby, and H. A. Gossard. (Bulletin 232, pp. 23-52, figs. 3.)

This is a revised edition of Bulletin 199.

OREGON STATION, Corvallis, J. Withycombe, Director.

Insecticides for the Gardener. By H. F. Wilson. (Circular 14, Crop Pest Series 4, pp. 4.)

This circular describes briefly the preparation and use of sprays to control insects of the garden.

Garden Management, II. By A. G. B. Bouquet. (Circular 14, Vegetable Growing Series 2, pp. 9.)

Brief directions are given for marketing and exhibiting vegetables. Notes on growing tomatoes and celery and on cultivating and irrigating the garden are included.

Two Apple Tree Borers. By H. F. Wilson. (Circular 15, pp. 4.)

A brief account is given of the life history, habits, and injuries of the flat-headed apple tree borer (*Chrysobothris femorata*) and of the round-headed apple tree borer (*Saperda candida*), with methods of control.

A Method of Budding the Walnut. By E. J. Kraus. (Circular 16, pp. 3-8, figs. 7.)

Brief directions are given for making modified shield and fruit buds in the propagation of walnut trees in Oregon.

WEST VIRGINIA STATION, Morgantown, E. D. Sanderson, Director.

West Virginia as a Poultry State. By H. Atwood. (Bulletin 135, pp. 113-159, pl. 1, figs. 11.)

This bulletin points out the advantages of West Virginia for poultry keeping and gives a compilation of information on methods of hatching and feeding poultry based on the work of the station. Notes on inflammation of the lungs and white diarrhea with methods of prevention are also included.

WISCONSIN STATION, Madison, H. L. Russell, Director.

The Use of Explosives in Clearing Land. By J. F. Kadonsky.
(Bulletin 216, pp. 3-19, figs. 20.)

Directions are given for the removal of stumps by the use of dynamite and virite, including notes on blasting boulders.

Physiological Effect on Growth and Reproduction of Rations Balanced from Restricted Sources. By E. B. Hart et al. (Research Bulletin 17, pp. 131-205, figs. 24.)

The results are reported of an investigation to determine the physiological effects upon growth and reproduction of animals, each group fed a balanced ration from a single plant (corn, wheat, and oats).

WYOMING STATION, Laramie, H. G. Knight, Director.

Twenty-first Annual Report, 1911. (Annual Report, 1911, pp. 139, figs. 3.)

This contains the director's report reviewing the year's work of the station, a financial statement, and reports of the agronomist, animal husbandman, research chemist, assistant station chemist, irrigation engineer, animal pathologist, parasitologist, and wool specialist, a meteorological summary for 1910, and a special paper on studies in tensile strength and elasticity of wool fibers.

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LIST OF STATION PUBLICATIONS RECEIVED BY THE OFFICE OF EXPERIMENT STATIONS DURING FEBRUARY, 1912.

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ALABAMA COLLEGE STATION, Auburn, J. F. Duggar, Director.

The Relation of the County Superintendent of Education to the Boys' Corn Club Work. How to Organize a Club. By L. N. Duncan. (Circular 9, pp. 8.)

This is a brief discussion of this subject.

Fighting the Cotton Worm. By W. E. Hinds. (Circular 10, pp. 8, fig. 1.)

Brief directions for combating the cotton worm (*Alabama argillacea*) are given.

The Relation of the Teacher to the Boys' Corn Club Movement. How to Organize a Club. By L. N. Duncan and J. B. Hobdy. (Circular 11, pp. 10.)

This is a brief discussion of this subject.

How to Organize and Conduct a Girls' Canning Club. By Della Stroud. (Circular 12, pp. 8, figs. 7.)

Brief suggestions are given.

School Gardening. By F. E. Lloyd and L. N. Duncan. (Circular 13, pp. 27, figs. 6.)

The place of school gardening in an educational system is discussed and brief directions for planning and managing the garden are given.

Vegetable Growing in Alabama. By P. F. Williams and H. M. Conolly. (Circular 14, pt. 1, pp. 3-42, figs. 8.)

Suggestions for growing the more important vegetables under Alabama conditions are given for the information of farmers, especially new settlers.

ARKANSAS STATION, Fayetteville, C. F. Adams, Director.

Cottonseed Poisoning of Live Stock. By R. R. Dinwiddie and A. K. Short. (Bulletin 108, pp. 395-410.)

Experiments with pigs to test the effect of fermentation, extraction with water, acid, and gasoline, and steaming in removing or lessening the toxic action of this feed are reported. A study of the pathologic effects of cottonseed meal on cattle is also reported.

Diseases of Apple Trees and Fruit Caused by Fungi and Insects.
By J. L. Hewitt and P. Hayhurst. (Bulletin 109, pp. 411-445.)

Information based in large part on the work of the station regarding the more important fungus and insect pests of apple trees and fruit and their control under Arkansas conditions is summarized in this bulletin.

Growing Alfalfa. By M. Nelson. (Circular 14, pp. 4.)

Brief suggestions on alfalfa culture under Arkansas conditions are given.

CALIFORNIA STATION, Berkeley, E. J. Wickson, Director.

The Production of the Lima Bean: The Need and Possibility of Its Improvement. By G. W. Shaw and M. E. Sherwin. (Bulletin 224, pp. 201-246, figs. 28.)

The characteristics of the Lima bean are described and the results of a study of methods of cultivating and harvesting the crop in California with a view to their improvement are reported, including the results of work begun in 1908 in the improvement of the bean by selection, with a list of desirable strains that have been developed.

Tolerance of Eucalyptus for Alkali. By R. H. Loughridge. (Bulletin 225, pp. 245-316, figs. 17.)

The results of plant experiments at the station and of field observations in different parts of the State to determine what percentages of alkali salts are injurious for different species of eucalyptus trees are reported. Parts of Bulletin 196 on methods of cultivation and descriptions of species of eucalyptus are here reprinted.

The Purple Scale. By H. J. Quayle. (Bulletin 226, pp. 317-340, figs. 12.)

The history, distribution, economic importance, and food plants of the purple scale (*Lepidosaphes beckii*) are briefly discussed, and the results of studies on its life history and habits and its more important parasites and predaceous enemies are reported. Notes are also given on species related to the purple scale. A bibliography of the literature since 1903, prepared by the Bureau of Entomology of this department, is added.

COLORADO STATION, Fort Collins, C. P. Gillette, Director.

Twenty-second Annual Report, 1910. (Annual Report, 1910, pp. 112.)

This contains the usual financial, executive, and departmental reports reviewing the work of the station during the year 1910, combined with the annual report of the State Agricultural College.

CONNECTICUT STATE STATION, New Haven, E. H. Jenkins, Director.

Sixteenth Report on Food Products and Fourth Report on Drug Products, 1911. By J. P. Street. (Annual Report, 1911, pt. 2, pp. 101-218.)

The results of inspection and analyses of food and drug products during the year are reported and discussed.

Commercial Feeding Stuffs, 1911. By E. H. Jenkins and J. P. Street. (Annual Report, 1911, pt. 3, pp. 219-258.)

The results of inspection and analyses of feeding stuffs during the year are reported, with explanations. Notes on the yield of alfalfa obtained in trials with this crop at the station are also included.

DELAWARE STATION, Newark, H. Hayward, Director.

Farmers' Day Guide. (Circular 5, pp. 23.)

The experiments in progress on the station farm in the departments of horticulture, agronomy, and animal husbandry are briefly outlined for the information of farmers attending Farmers' Day at the college.

GEORGIA STATION, Experiment, M. V. Calvin, Director.

Tomatoes. By H. P. Stuckey and J. C. Temple. (Bulletin 96, pp. 39-91, figs. 14.)

Part 1 of this bulletin describes the history and classification of the tomato, the construction of hotbeds, and methods of transplanting, summarizes the results of variety tests, and reports the results of studies on waste by canning and the influence of pruning and staking on time of ripening and yield, together with a description of varieties tested in 1911. Part 2 describes the history and characteristics of blossom end rot, and reports a continuation of studies in Bulletin 82 on the causative organism and methods of control of the disease. A bibliography is added.

ILLINOIS STATION, Urbana, E. Davenport, Director.

Some Important Insects of Illinois Shade Trees and Shrubs. By S. A. Forbes. (Bulletin 151, pp. 461-529, figs. 67.)

The more important insects and enemies of shade trees and shrubs, their injuries and methods of control, are briefly described for the information of municipal authorities, town improvement societies, and owners of lawns. The bulletin is based on experiments and observations by the Illinois station in different cities and towns of the State.

Contagious Abortion of Cows. By W. J. MacNeal and H. W. Mumford. (Bulletin 152, pp. 529-543.)

The more important facts concerning the cause, prevention, and restriction of the disease, including an account of investigations at the Illinois station and elsewhere, are reported.

Plant Food in Relation to Soil Fertility. By C. G. Hopkins. (Circular 155, pp. 10.)

Statistics are presented and discussed to show the value and necessity of supplying plant food to the soil in permanent systems of agriculture.

INDIANA STATION, Lafayette, A. Goss, Director.

Orchard Heating. By C. G. Woodbury and J. W. Wellington. (Bulletin 154, pp. 71-96, figs. 16.)

The results of tests in orchard heating in Indiana with a number of different heaters are reported.

Orchard Heating. By C. G. Woodbury and J. W. Wellington. (Bulletin 154, popular edition, pp. 3-8, figs. 7.)

This is a popular edition of this bulletin.

IOWA STATION, Ames, C. F. Curtiss, Director.

The Chemical Nature of the Organic Nitrogen in the Soil. By S. L. Jodidi and A. A. Wells. (Research Bulletin 3, pp. 113-154, pls. 2, figs. 2.)

This is a continuation of investigations reported in Research Bulletin 1 on the organic nitrogenous substances in soil plats manured and cropped in dif-

ferent ways. The results of special studies of the influence of the percentage of humus, moisture, temperature, and available phosphoric acid on the decomposition of organic matter as measured by the carbon dioxide content of the soil are also reported.

KENTUCKY STATION, Lexington, M. A. Scovell, Director.

Twenty-third Annual Report, 1910. (Annual Report, 1910, pp. XX+29+338, pls. 14, figs. 14.)

This contains a financial statement, reports by the director reviewing the year's work of the departments of the station, and the food and drug inspection for 1908 and 1909, reprints of Bulletins 147 to 152, inclusive, analyses of mineral waters of the State, and meteorological data for 1910.

MAINE STATION, Orono, C. D. Woods, Director.

Insect Notes for 1911. By O. A. Johannsen and Edith M. Patch. (Bulletin 195, pp. 227-248, pls. 2.)

Brief notes on the more important insects encountered in 1911 are given, together with more extended accounts of preliminary tests with different poisons for the control of wireworms and of *Pemphigus tessellata*.

MARYLAND STATION, College Park, H. J. Patterson, Director.

Some Experiments with Poultry. By C. L. Opperman and R. H. Waite. (Bulletin 157, pp. 81-95, figs. 5.)

This bulletin summarizes the results of experiments and observations on the influence of age of fowl on egg production, the time required until eggs are fertile after male is added to, and the persistence of fertility after the male is removed from the breeding pen, and the effect of corn on color of the yolk of eggs. Notes on the value of trap-nest records are included.

Peach Culture. By C. P. Close and W. R. Ballard. (Bulletin 159, pp. 111-192, figs. 31.)

The growing of peaches under Maryland conditions is discussed and new varieties which are considered worthy of trial are described. Notes on diseases and insects of the peach and their control are also given.

Strawberries. By C. P. Close, W. R. Ballard, and T. H. White. (Bulletin 160, pp. 193-222.)

This bulletin describes the new varieties of strawberries tested at the station since 1907. The more important cultural directions originally published in Bulletin 124 are reprinted and notes on diseases and insects of the strawberry are added.

Treatment for the San José Scale and Terrapin Scale Insects. By T. B. Symons, E. N. Cory, and O. G. Babcock. (Bulletin 161, pp. 221-231, pls. 3.)

This is a continuation of work reported in Bulletins 148 and 149, and gives the results of spraying experiments conducted by the station during 1911 for the control of these insects.

Results of Seed Analyses. By J. B. S. Norton. (Bulletin 162, pp. 235-241, figs. 5.)

The more important results of examinations of seed on the market in Maryland during the summer of 1911 are reported and discussed. A copy of the purity and germination standards of agricultural seeds of this department is given.

MASSACHUSETTS STATION, Amherst, W. P. Brooks, Director.

Inspection of Commercial Fertilizers. By H. D. Haskins et al. (Bulletin 140, pp. 86.)

The text of the fertilizer law is given and the results of inspection and analyses of samples of fertilizers collected during 1911 are reported with explanations.

Meteorological Observations. By J. E. Ostrander and R. N. Hallowell. (Meteorological Bulletin 277, pp. 4.)

This is a summary for January, 1912.

MICHIGAN STATION, East Lansing, R. S. Shaw, Director.

Studies of Agglutination Reactions in Hog Cholera During the Process of Serum Production. By W. Giltner. (Technical Bulletin 8, pp. 3-40.)

This is a continuation of investigations reported in Technical Bulletin 3 describing, however, more extensive and definite studies of "the differences in agglutinative power of the blood of normal pigs, of pigs treated with hog cholera virus alone or simultaneously with the protective serum, and of pigs treated with increasing doses of virus during the hyperimmunizing process."

The Influence of the Products of Lactic Organisms upon *Bacillus typhosus*. By Zae Northrup. (Technical Bulletin 9, pp. 3-33, figs. 2.)

Studies of the viability of *B. typhosus* in milk, indicating lactic fermentation, are reported.

The Fermenting Capacity of the Average Single Cell of *Bacterium lactis acidi*. By O. Rahn. (Technical Bulletin 10, pp. 3-40, fig. 1.)

A revised formula for computing the fermenting power of this organism is proposed and tests of its accuracy as applied to different strains under varying food and temperature are reported.

Analyses of Miscellaneous Materials. By A. J. Patten. (Special Bulletin 55, pp. 3-12.)

Analyses of farmers' samples of feeding stuffs, tobacco compounds, fertilizer materials, lime-sulphur solutions, and insecticides are reported.

MISSISSIPPI STATION, Agricultural College, E. R. Lloyd, Director.

Suggestions for Growing Home Fruits. By A. B. McKay. (Bulletin 146, pp. 3-18.)

Information regarding the selection, planting, and care of orchards, vineyards, and strawberries under Mississippi conditions is given.

Apple Growing in Mississippi. By H. C. Thompson. (Bulletin 147, pp. 3-15, figs. 5.)

Practical information for establishing and caring for an apple orchard under Mississippi conditions is given, including notes on the control of insects and diseases.

The Inspection and Analyses of Cottonseed Meal on Sale in Mississippi. (Bulletin 148, pp. 4-35.)

Analyses of samples of cottonseed meal collected during the spring of 1911 are reported.

Inspection and Analyses of Commercial Feeding Stuffs on Sale in the State. (Bulletin 149, pp. 3-37.)

The results of inspection of feeding stuffs collected during 1910-11 are reported, with explanations.

Inspection and Analyses of Commercial Fertilizer on Sale in the State. (Bulletin 150, pp. 3-51.)

The results of inspection of samples of fertilizers for the season 1910-11 are reported, including summaries of previous seasons.

The Inspection of Cottonseed Meal on Sale in the State. (Bulletin 151, pp. 4-29.)

The results of inspection of samples of cottonseed meal for the season 1910-11 are reported and briefly discussed.

Inspection and Analyses of Commercial Feeding Stuffs on Sale in the State. (Bulletin 152, pp. 3-31.)

Analyses of samples of feeding stuffs collected during the spring and summer of 1911 are reported.

Inspection and Analyses of Commercial Fertilizers on Sale in the State. (Circular 33, pp. 4-53.)

Analyses of samples of fertilizers collected during the winter of 1910-11 are reported.

NEBRASKA STATION, Lincoln, E. A. Burnett, Director.

The Germination Test for Seed Corn. By T. A. Kiesselbach. (Extension Bulletin 3, pp. 4, figs. 7.)

Brief directions with illustrations are given.

NEVADA STATION, Reno, J. E. Stubbs, Director.

Anthrax. By W. B. Mack. (Circular 13, pp. 11.)

A brief compilation of information regarding the characteristics and methods of prevention of the disease is given.

NEW HAMPSHIRE STATION, Durham, J. C. Kendall, Director.

Inspection of Fertilizers for 1911. By B. E. Curry and T. O. Smith. (Bulletin 155, pp. 3-9.)

Analyses of samples of fertilizers collected during 1911 are reported.

NEW YORK STATE STATION, Geneva, W. H. Jordan, Director.

Director's Report for 1911. By W. H. Jordan. (Bulletin 342, pp. 401-420.)

This contains a financial statement, a statement of the needs of the station, and a review of the year's work in the different departments of the station.

Pedigreed Nursery Stock. By U. P. Hedrick (Circular 18, pp. 8.)

The practicability of improving fruits by selection of buds, scions, and cuttings in propagation is discussed.

Grape Culture. By F. W. Gladwin. (Circular 19, pp. 8.)

Brief information on grape culture and varieties to plant under New York conditions is given.

NORTH DAKOTA STATION, Agricultural College, J. H. Worst, Director.

Alfalfa. By L. R. Waldron. (Bulletin 95, pp. 357-424, figs. 15.)

Practical information based on the work of the station on alfalfa culture under North Dakota conditions is given in part 1 of the bulletin. Part 2 reports the results of tests in drought resistance, water requirements, and seed production.

OHIO STATION. Wooster. C. E. Thorne, Director.

Cooperative Forestry Work. By E. Seerest. (Circular 119, pp. 91-93.)

This is a notice of the assistance the station is prepared to give in such work.

OREGON STATION, Corvallis. J. Withycombe, Director.

Orchard Management. By C. I. Lewis. (Bulletin 111, pp. 3-96, figs. 41.)

The management of orchards under Oregon conditions is fully discussed on the basis of experiments at the station and the experience of practical growers. A bibliography, list of fruit growers' associations, and grafting wax formulas are given in the appendix.

PENNSYLVANIA STATION, State College. T. F. Hunt, Director.

Beef Production in Pennsylvania. By W. A. Coehel. (Bulletin 112, pp. 3-16, figs. 6.)

This is a compilation of information on this subject based on the results of work at the Pennsylvania station.

RHODE ISLAND. Kingston. H. J. Wheeler, Director.

The Gain in Nitrogen during a Five-year Pot Experiment with Different Legumes. By B. L. Hartwell and F. R. Pember. (Bulletin 147, pp. 3-14, pls. 2.)

The results of pot experiments to ascertain the amount of nitrogen obtained from the air by legumes without the addition of nitrogenous manure and with optimum amounts of other manures are reported.

Twenty-fourth Annual Report, 1911. (Annual Report, 1911, pp. 109-160+VII.)

This contains the director's report reviewing the year's work of the different departments of the station, and a financial statement. Meteorological data for the year and a general summary for the years from 1890 to 1911 are included.

SOUTH DAKOTA STATION, Brookings. J. W. Wilson, Director.

Annual Report, 1911. (Annual Report, 1911, pp. 32.)

This contains the usual executive, financial, and departmental reports for the year ended June 30, 1911.

TENNESSEE STATION, Knoxville. H. A. Morgan, Director.

Report of Cooperative and Extension Work in Agriculture in Middle Tennessee for the Years 1909-10. (Pp. 93, figs. 8.)

This contains a report by the director reviewing the cooperative experiments for 1909 and 1910 in middle Tennessee, with detailed accounts of the work as previously reported in Bulletins 92 and 93 of the station.

UTAH STATION, Logan. E. D. Ball, Director.

The Movement of Nitric Nitrogen in Soil and Its Relation to "Nitrogen Fixation." By R. Stewart and J. E. Greaves. (Bulletin 114, pp. 181-194.)

This is a review of investigations at the Utah and Colorado stations on the movement and accumulation of nitrate nitrogen in irrigated soils with particular reference to the question of bacterial fixation of excessive amounts of nitrates in western soils.

VERMONT STATION, Burlington, J. L. Hills, Director.

Forest Nursery Stock for Distribution in the Spring of 1911. By A. F. Hawes. (Circular 6, pp. 8, pls. 4.)

Brief suggestions regarding the cost, distribution, and transplanting of forest trees and the installment of private nurseries are given in this circular.

Plant Food Combinations for Sundry Crops. By J. L. Hills. (Circular 7, pp. 14.)

This is a summary of the more important information originally published in Bulletin 116 of the station.

Publications on Hand. (Circular 8, pp. 6.)

A list of station publications available for distribution is given.

WISCONSIN STATION, Madison, H. L. Russell, Director.

Report of the Director, 1911. By H. L. Russell. (Bulletin 218, pp. 78, figs. 20.)

This contains the director's report reviewing the year's work in the different departments of the station, digests of publications issued during the year, and a financial statement.

A Method of Making a Social Survey of a Rural Community. By C. J. Galpin. (Circular of Information 29, pp. 11, figs. 2.)

A plan is proposed for making a survey of the different social organizations in rural districts.

WYOMING STATION, Laramie, H. G. Knight, Director.

The Relation of the Sheep-tick Flagellate (*Crithidia melophagia*) to the Sheep's Blood. By L. D. Swingle. (Bulletin 91, pp. 3-16, figs. 5.)

Investigations to determine whether the sheep-tick flagellate is a developmental phase of blood trypanosomes and whether it can be communicated to the sheep's blood are reported. A short bibliography is given.

The Value of Fiber-testing Machines for Measuring the Strength and Elasticity of Wool. By J. A. Hill. (Bulletin 92, pp. 3-23, fig. 1.)

The usefulness of fiber-testing machines is discussed on the basis of the results of extensive tests at the station of the strength and elasticity of wool fibers.



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Issued April 25, 1912.

United States Department of Agriculture,

OFFICE OF EXPERIMENT STATIONS.

A. C. TRUE, Director.

LIST OF STATION PUBLICATIONS RECEIVED BY THE OFFICE OF EXPERIMENT STATIONS DURING MARCH, 1912.

NOTE.—The station publications noted in this list are not distributed by the Department of Agriculture, but can usually be obtained, as far as the supply will permit, by applying to the stations issuing them.

ALABAMA COLLEGE STATION, Auburn, J. F. Duggar, Director.

Local Fertilizer Experiments with Cotton in South Alabama in 1911.

By J. F. Duggar, J. T. Williamson, L. L. Glover, and E. Hodson.
(Bulletin 160, pp. 241-296.)

Cooperative field experiments during 1911 on the principal soil types in the southern half of Alabama with various fertilizing materials and mixtures on cotton are reported.

Lime for Alabama Soils. By J. F. Duggar and M. J. Funchess.
(Bulletin 161, pp. 301-324.)

The action, sources, forms, and need in Alabama soils of lime is discussed, and the results of experiments with lime in different parts of the State are summarized.

Local Fertilizer Experiments with Cotton in North Alabama in 1911.

By J. F. Duggar, J. T. Williamson, L. L. Glover, and E. Hodson.
(Bulletin 162, pp. 3-56.)

Cooperative field experiments during 1911 on the principal soil types of the northern half of Alabama to test the value of various fertilizer materials and mixtures on cotton are reported.

The Southern Pine Beetle and Its Control. By W. E. Hinds. (Circular 15, pp. 45-58, figs. 4.)

This is a summary of the more important information contained in Bulletin 476 of the Bureau of Entomology of this department.

CALIFORNIA STATION, Berkeley, E. J. Wickson, Director.

Grape Vinegar. By F. T. Bioletti. (Bulletin 227, pp. 339-366, figs. 8.)

Methods of manufacturing vinegar from grapes for domestic and industrial purposes are described, and studies of the relation of alcoholic and acetic fermentation in the process are reported.

- Hot Room Callusing. By F. T. Bioletti and L. Bonnet. (Circular 76, pp. 12, figs. 6.)

The defects of the ordinary sand callusing bed are pointed out and directions for callusing the grafts in boxes of moss in a hot room are given.

CONNECTICUT STATE STATION, New Haven, E. H. Jenkins, Director.

- Eleventh Report of the State Entomologist. 1911. By W. E. Britton. (Annual Report, 1911, pt. 4, pp. IV+259-346+V-VI, pls. 16, figs. 10.)

An account is given of the activities of this department of the station during the year, including notes on various insects and results of inspection of nurseries and apiaries and other control work.

GEORGIA STATION, Experiment, M. V. Calvin, Director.

- Corn Culture. By J. M. Kimbrough. (Bulletin 97, pp. 96-107.)

Results of tests of varieties, fertilizers, effect of detasseling, seed from different parts of the cob, number of stalks per hill, and ordinary versus the Williamson method of culture are reported. Rainfall data for the season of 1911 and previous years are also given.

- Cotton Culture. By J. M. Kimbrough. (Bulletin 98, pp. 111-122, fig. 1.)

The results of variety and fertilizer tests with cotton during 1911 are reported and compared with the results for 1909 and 1910. Notes on the breeding of cotton varieties for immunity against anthracnose are added.

HAWAII FEDERAL STATION, Honolulu, E. V. Wilcox, Special Agent in Charge.

- A Study of Humus in Hawaiian Soils. By W. P. Kelley and W. McGeorge. (Press Bulletin 33, pp. 23, fig. 1.)

A modified clay filter method for determining the humus in soils is described and compared with the official Hilgard, Mooers, Hampton, Cameron, Breazeale, and Rather methods. A brief study of the color and other properties of humus is also reported.

INDIANA STATION, Lafayette, A. Goss, Director.

- Commercial Apple Growing. By C. G. Woodbury and W. M. Richards. (Circular 30, pp. 124, figs. 73.)

The present status and possibilities of apple growing in Indiana are discussed and detailed information regarding the different problems of commercial apple growing in the State is given. A list of horticultural publications and of addresses of dealers in spray materials is given in the appendix.

- Small Seed Improvement. By G. M. Frier and Lovina S. Merick. (Circular 31, pp. 15, figs. 5.)

The importance and methods of testing seeds are discussed and attention is called to the establishment for this purpose at the station of a branch seed laboratory of the Bureau of Plant Industry of this department.

- Canada Thistle and Its Eradication. By A. G. Johnson. (Circular 32, pp. 12, figs. 3.)

The plant and its habits, introduction, and distribution are briefly described and directions for its eradication are given. Copies of Indiana laws pertaining to the Canada thistle are given.

Liming the Soil. By J. B. Abbott. (Circular 33, pp. 16, figs. 4.)

The forms, function, action, need in Indiana soils, tests, and methods of application of lime are briefly discussed. A list of names of manufacturers of lime is given.

Orchard Spray Calendar. By M. W. Richards. (Circular 34, pp. 12, figs. 8.)

Directions for preparing and applying sprays for orchard fruits in Indiana are given.

Twenty-fourth Annual Report, 1911. (Annual Report, 1911, pp. 59.)

This contains reports by the director and by the heads of departments reviewing the year's work of the station, a list of publications issued during the year, and a financial statement.

KANSAS STATION, Manhattan. E. H. Webster, Director.

Kansas State Live Stock Registry Board Report No. 2. (Bulletin 179, pp. 208-331, pls. 14.)

This bulletin states the main provisions and benefits of the Kansas stallion law; discusses fraudulent pedigrees; points out the difference between the French draft and the Percheron horse; defines the true status of a nonstandard stallion; and gives tabulated lists of stallions licensed, relicensed, and transferred from October, 1910, to October, 1911; and various papers by a practical horseman on the management and care of horses.

Bacteriological Studies on Eggs. By O. Maurer. (Bulletin 180, pp. 333-396, figs. 3.)

The results of studies of the origin of *Bacillus coli* in eggs, the need and value of bacteriological methods of judging the healthfulness of frozen and desiccated eggs, infection of eggs during the formation, the influence of age of fowl on bacterial content of eggs, and the relation between the bacterial content and hatching qualities of eggs are reported.

KENTUCKY STATION, Lexington. M. A. Scovell, Director.

A Preliminary Study of Kentucky Localities in Which Pellagra is Prevalent. By H. Garman. (Bulletin 159, pp. 3-79, pls. 27, figs. 24.)

A study of the life history and prevalence of different species of sand flies (*Simuliidae*) and the relation of these and of other insects in different localities of Kentucky to the spread of pellagra is reported. Observations on the occurrence and possible relation to pellagra of fungus diseases of corn grown in the localities are also reported with methods of control.

Parturient Paresis (Milk Fever) and Eclampsia. By D. J. Healy and J. H. Kastle. (Bulletin 160, pp. 83-104, pls. 9.)

Studies of the relation of various substances, more particularly colostrum, to parturient paresis and abortion, and of the similarity between parturient paresis in cows and eclampsia in the human are reported.

LOUISIANA STATIONS, Baton Rouge. W. R. Dodson, Director.

Some Studies on Cottonseed Meal Poisoning. By C. W. Edgerton and H. Morris. (Bulletin 134, pp. 3-35.)

This bulletin reports a study with guinea pigs, rabbits, and hogs of the toxicity of cotton seed from different sources and of seed and meal treated in various ways, including also the possible relation of fungus growths, highly nitrogenous rations, and pyrophosphoric acid to the injurious effects observed.

MAINE STATION, Orono. C. D. Woods, Director.

The Mycetophilidae of North America, III. By A. O. Johannsen. (Bulletin 196, pp. 247-328, pls. 5.)

Genera and species of the subfamily Mycetophilidae, which passes its earlier stages in mushroom or decaying wood, are classified and described.

Official Inspections. (Official Inspections 34, pp. 109-124.)

The results of an inspection of spices, prepared mustard, honey, and gluten flour under the State pure-food law are reported.

Official Inspections. (Official Inspections 35, pp. 125-136.)

Sections of the inspection laws of the State providing for the inspection of sanitary conditions of establishments where food is manufactured are given and the results of such inspection work during the fall of 1911, as well as the labeling of compounds and imitations containing preservatives and chemicals, food analyses, and methods of digging, preparing, and handling clams, are briefly reviewed and the importance of written guaranties in the sale of food products is pointed out.

Official Inspections. (Official Inspections 36, pp. 12.)

The chief requirements of the law regulating the sale of seed in the State are stated, and the results of examination of samples of seed collected by the station during 1911 are reported.

MASSACHUSETTS STATION, Amherst. W. P. Brooks, Director.

Balanced Rations for Dairy Stock. By J. B. Lindsey. (Circular 30, pp. 7.)

Brief suggestions to farmers for selecting feeds and mixing rations for dairy cows and for young dairy stock are given.

MISSOURI COLLEGE STATION, Columbia. F. B. Mumford, Director.

The San José Scale in Missouri. By L. Haseman. (Bulletin 98, pp. 59-116, figs. 16.)

The introduction, distribution, spread, life history and habits, and treatment and control of the San José scale are fully discussed.

NEBRASKA STATION, Lincoln. E. A. Burnett, Director.

Fattening Hogs in Nebraska. By W. P. Snyder. (Bulletin 123, pp. 3-40, figs. 7.)

Previous work by the station on the subject is summarized, and the results of three seasons' feeding experiments to determine the most profitable way of feeding and the proportion of alfalfa to feed with corn, and to compare the value of different grains and mill products as supplementary feeds for a part of the corn in a ration of corn and alfalfa are reported.

NEW JERSEY STATIONS, New Brunswick. J. G. Lipman, Director.

Analyses and Valuations of Commercial Fertilizers and Ground Bone. By C. S. Cathcart et al. (Bulletin 241, pp. 3-41.)

This bulletin gives the balance of the analyses of fertilizers inspected in 1911 not reported in Bulletin 240, together with a discussion of the whole inspection work of the year.

NEW MEXICO STATION, State College, L. Foster, Director.

A Study of the Carbohydrates in the Prickly Pear and its Fruits.
By R. F. Hare. (Bulletin 80, pp. 5-30.)

Previous work of the station largely in cooperation with this department on the economic utilization of the cactus as food for stock and man and for various industrial purposes is reviewed. Studies of the gums and mucilages of the plant and the juices of the fruit, with special reference to the separation and identification of the carbohydrates present, are reported.

NEW YORK STATE STATION, Geneva, W. H. Jordan, Director.

A New Fruit Tree Enemy in New York. By F. H. Hall. (Bulletin 343, popular edition, pp. 7, fig. 1.)

This is a popular edition of Bulletin 343.

The Plums of New York. By U. P. Hedrick et al. (Annual Report, 1910, pt. 2, pp. XII+616, pls. 99.)

This is the third volume of the series of fruit publications issued by the station and embodies the results of studies and observations by members of the station staff, together with information from practical plum growers in the State. The work is presented as a reliable guide to all the varieties of plums that are likely to come to the attention of New York plum growers, the varieties being illustrated by means of colored plates.

NORTH CAROLINA COLLEGE STATION, West Raleigh, C. B. Williams, Director.

Thirty-fourth Annual Report, 1911. (Annual Report, 1911, pp. 79+186, figs. 66.)

This contains reports by the director and by the heads of departments reviewing the year's work of the station, a financial statement, scientific papers on double blossom of the dewberry and the blackberry, a preliminary report of investigations with the corn billbug, particularly with *Sphenophorus callosus*, okra wilt (Fusariose), *Fusarium vasinfectum*, and clover rhizoctoniose, and reprints of Press Bulletins 22 and 23 and of Bulletins 209 to 216, inclusive.

NORTH DAKOTA STATION, Agricultural College. J. H. Worst, Director.

Some Principles of Dry Farming. By L. R. Waldron. (Bulletin 96, pp. 425-465, figs. 11.)

The more important relations of soil, water, and plants in their bearing on cultural methods and crop rotations in dry farming in North Dakota, including crops adapted to the purpose, are discussed.

Special Bulletin Food Department. (Special Food Bulletin, 2 (1912), No. 1, pp. 15, fig. 1.)

This bulletin gives results of examination of miscellaneous food products sold in North Dakota, notes on the methods of a Minneapolis company dealing in farm products and supplies in the State, on chemical preservatives, coal-tar dyes, a face lotion, an antiseptic compound, and on labeling biscuit packages, and reports on the protein content of vinegar and the coating and polishing of rice.

OHIO STATION, Wooster, C. E. Thorne, Director.

Flour Mill Fumigation. By W. H. Goodwin. (Bulletin 234, pp. 171-184, fig. 1.)

Tests of thorough cleaning, fumigation with hydrocyanic-acid gas, and treatment with high temperatures to control the Mediterranean flour moth (*Ephestia kühniella*), which is described, are reported.

The Climate of Ohio. By J. W. Smith. (Bulletin 235, pp. 185-209, figs. 15.)

In this bulletin the more important meteorological facts compiled from various sources are tabulated and charted with a view of showing the comparative climatic conditions for different sections of the State.

Strawberry Notes for 1910-11. By W. J. Green, J. H. Gourley, and P. Thayer. (Bulletin 236, pp. 211-239, figs. 28.)

Variety tests of strawberries during 1910 and 1911, including a comparison of hill and matted row culture are reported. Brief suggestions regarding methods of culture are given.

Farm Poultry. By W. A. Lloyd and W. L. Elser. (Circular 118, pp. 69-90, pl. 1, figs. 7.)

The results of a study of the cost of production of poultry products under farm conditions in Ohio, including the city lot and the suburban poultry products, are reported.

The Seed Corn Situation. By C. G. Williams. (Circular 121, pp. 4.)

The importance of testing seed corn is pointed out, with directions for making the test.

OREGON STATION, Corvallis, J. Withycombe, Director.

Swine Husbandry in Oregon. By J. Withycombe and E. L. Potter.

Diversified Crop Production for the Oregon Dry Farmer. By H. D. Scudder. Dairy Cows and Alfalfa. By F. L. Kent. Poultry Production. By J. Dryden. (Circular 18, pp. 3-40, figs. 15.)

This circular contains a series of popular articles on various subjects for distribution in connection with a demonstration train.

PENNSYLVANIA STATION, State College, T. F. Hunt, Director.

Work of the Agricultural Experiment Station for 1910-11. By W. Frear. (Bulletin 113, pp. 3-22.)

This bulletin summarizes the results of investigations at the Pennsylvania station during 1910-11 on the following subjects: The fruit soils of Pennsylvania and their adaptation, grass-land humus, lime requirements of soil under different systems of fertilizing, influence of fertilizers upon the composition and hardness of wheat, feeding the apple, low-grade nitrogenous materials in wet-mixed fertilizers, effect of partial sterilization upon nitrification, the hereditary qualities of plants as a factor in production, the relation of leaf form to the value of cigar-tiller tobacco, the maintenance ration of cattle, methods of steer feeding, roughage versus grain for dairy cows, fattening draft horses, and fattening chickens.

RHODE ISLAND STATION, Kingston, H. J. Wheeler, Director.

Field Experiments on Individual Farms. By H. J. Wheeler. (Bulletin 148, pp. 17-44+II, pl. 1.)

The results of field experiments on different farms in the State to compare the efficiency of various fertilizing materials and mixtures on grass, potatoes, apples, oats, beets, turnips, cantaloups, asparagus, and corn are reported.

TEXAS STATION, College Station, B. Youngblood, Director.

Observations on European Agriculture. By G. S. Fraps. (Bulletin 143, pp. 3-35, figs. 16.)

This is a discussion of such observations on European agriculture as may offer suggestions of value to farmers in Texas.

VIRGINIA TRUCK STATION, Norfolk, T. C. Johnson, Director.

Strawberry Culture. By P. T. Cole. (Bulletin 6, pp. 103-128, figs. 6.)

Practical information for the growing of strawberries on the truck soils of eastern Virginia is given, based on field observations. Varieties of strawberries tested at the Virginia truck station are described.

Truck Crop Potatoes. By T. C. Johnson. (Bulletin 7, pp. 131-154, figs. 6.)

This bulletin gives practical information for the growing of potatoes as a truck crop in eastern Virginia based on the work of the Virginia truck station and the experience of growers. Experiments to determine the relative earliness and productivity of native-grown and Maine-grown seed tubers are also reported.

WASHINGTON STATION, Pullman, R. W. Thatcher, Director.

Wheat and Flour Investigations, IV. By R. W. Thatcher. (Bulletin 102, pp. 3-18.)

Studies of the relation of nitrogen content to total weight of grain and to the average weight of kernel, the relation of composition of spikes to length of straw, and the distribution of nitrogen in different parts of spikes of wheat are reported with a view of establishing a basis for the selection of desirable seed for breeding.

The Control of the Codling Moth. By A. L. Melander. (Bulletin 103, pp. 3-55, figs. 3.)

This bulletin summarizes the more important results of studies conducted by the Washington station since 1903 on the life history and control of the codling moth. A bibliography of the literature on the subject since 1903 is added.

Twenty-first Annual Report, 1911. (Bulletin 104, pp. 20.)

This contains the director's report reviewing the year's work in the different departments of the station and a financial statement.

WISCONSIN STATION, Madison, H. L. Russell, Director.

Cranberry Bog Construction for Wisconsin. By O. G. Malde. (Bulletin 213, pp. 24, figs. 19.)

The extent and possibilities of cranberry culture in Wisconsin are pointed out, and detailed directions for constructing bogs are given, including also notes on varieties and methods of planting.

Practical Lessons from the Management of the University Dairy Herd. By G. C. Humphrey and F. W. Woll. (Bulletin 217, pp. 34, figs. 4.)

Records as to food consumption and the production of milk and butter fat of the individual cows of the college herd from 1909 to 1911 are presented and discussed. Attention is called also to the influence of pasture on the production and live weight of cows.

Effect of Heat and Oxidation on the Phosphorus of the Soil. By P. P. Peterson. (Research Bulletin 19, pp. 16.)

Investigations on the subject by others are briefly reviewed and the results of studies of the effect of varying degrees of temperature and of oxidation with hydrogen peroxid on the solubility of phosphoric acid of soils in fifth-normal nitric acid are reported. Studies of the effect of heat on the solubility of phosphoric acid of wavellite and dufrenite are also reported.

Factors Influencing the Availability of Rock Phosphate. By E. Truog. (Research Bulletin 20, pp. 17-51, figs. 6.)

Previous investigations on this subject are briefly reviewed, and the results of pot experiments to study the influence of fermenting cow manure, grass, and thoroughness of mixing with the soil on the availability of raw rock phosphate are reported.

Studies of the Nutrition of the Pig. By E. V. McCollum and H. Steenbock. (Research Bulletin 21, pp. 53-86, figs. 5.)

Studies with pigs to determine the nature of the repair process of protein metabolism are reported, including also the relation to protein metabolism of creatinin excretion. A metabolism cage for the pig is described.

Commercial Feeding Stuffs and Fertilizers Licensed for Sale in Wisconsin, 1912. By F. W. Woll. (Circular of Information 31, pp. 13.)

A list of names and addresses of manufacturers who have licensed their products for sale during 1910 is given.



Issued May 16, 1912.

United States Department of Agriculture,

OFFICE OF EXPERIMENT STATIONS.

A. C. TRUE, Director.

LIST OF STATION PUBLICATIONS RECEIVED BY THE OFFICE OF EXPERIMENT STATIONS DURING APRIL, 1912.

NOTE.—The station publications noted in this list are not distributed by the Department of Agriculture, but can usually be obtained, as far as the supply will permit, by applying to the stations issuing them.

CALIFORNIA STATION, Berkeley, E. J. Wickson, Director.

New Control Methods for the Pear Thrips and Peach Tree Borer.
By E. L. Morris. (Bulletin 228, pp. 367-374, figs. 6.)

Experiments with lime sprays for the control of pear thrips (*Euthrips pyri*) and with asphaltum treatment to prevent injury from the peach tree borer (*Sanninoidea pacifica*) are reported.

Rice: A Possible New Industry for California. By G. W. Shaw and A. J. Gaumnitz. (Circular 74, pp. 26, figs. 7.)

The results of a field investigation of the conditions of the rice growing industry in California are reported, with a view of answering inquiries regarding the possibilities for its development, and to determine the advisability of establishing some systematic work in rice culture under the direction of the station.

A New Leakage Gage. By C. W. Woodworth. (Circular 75, pp. 15, figs. 8.)

An apparatus for determining the leakage of gas in fumigation tents is described.

COLORADO STATION, Fort Collins, C. P. Gillette, Director.

On the Measurement and Division of Water. By L. G. Carpenter. (Bulletin 150, pp. 3-48, figs. 5.)

This bulletin, which is a revision of Bulletin 27 of this station, describes methods of division of water for small ditches and laterals and of measurement which may be used in large ditches with particular reference to the use of the weir.

GEORGIA STATION, Experiment, M. V. Calvin, Director.

Twenty-fourth Annual Report, 1911. (Annual Report, 1911, pp. 125-138.)

This contains the usual financial statement and brief administrative reports by the director of the station and the president of the board of control.

HAWAII FEDERAL STATION, Honolulu, E. V. Wilcox, Special Agent in Charge.

The Function and Distribution of Manganese in Plants and Soils.
By W. P. Kelley. (Bulletin 26, pp. 5-56.)

Previous investigations on the subject are reviewed, and the results of studies of the physiological effects and distribution of manganese, and of the composition of ash in different plants, and the origin, composition, and properties of the manganiferous soils of Oahu are reported in detail.

Annual Report, 1911. (Annual Report, 1911, pp. 63, pls. 7, figs. 6.)

This contains a summary of the investigations at the Hawaii station during 1911 by the special agent, and more detailed reports for the departments of entomology, horticulture, chemistry, and agronomy, including notes on insects attacking leguminous crops, papaya investigations, investigation of bananas in Hilo and Olaa, Hawaii, soil investigations, and cotton experiments.

ILLINOIS STATION, Urbana, E. Davenport, Director.

Rice Blight. By J. S. Collier. (Circular 156, pp. 3-19, figs. 11.)

This is a preliminary report of experiments made during 1910 and 1911 in the rice region of Arkansas to determine the cause of blight in rice, more particularly the relation thereto of methods of flooding, soil conditions, and fertilizers. Brief suggestions for the control of the disease are given.

INDIANA STATION, Lafayette, A. Goss, Director.

Supplementary Pasture Crops. By M. L. Fisher and F. G. King. (Circular 35, pp. 16, fig. 1.)

The value, methods of production, and succession of different forage crops as substitutes for clover as hog pasture in Indiana are discussed.

How to Grow Alfalfa. By A. T. Wiancko and M. L. Fisher. (Circular 36, pp. 16, figs. 6.)

Directions for growing alfalfa under Indiana conditions are given.

IOWA STATION, Ames, C. F. Curtiss, Director.

Planning and Adorning the Farmstead. By A. T. Erwin. (Bulletin 126, pp. 23-41, figs. 15.)

The locating and adorning of the farmstead and the planning of the farm in relation to the farmstead are discussed.

Spraying Practice for Orchard and Garden. By S. A. Beach. (Bulletin 127, pp. 47-86, figs. 9.)

Detailed directions are given, including methods of preparing and applying spray mixtures, for combating the more common insect pests and plant diseases of orchard and garden fruits, with special reference to the apple, under Iowa conditions.

Some Data for Oat Growers. By L. C. Burnett. (Bulletin 128, pp. 91-127, figs. 5.)

The results of tests of varieties, acclimation, size and weight of seed, and rate and method of seeding of oats at the Iowa station, in cooperation with this department, are reported. Notes on market grades of oats and classification of types of oats for exhibition purposes are also given.

KANSAS STATION, Manhattan, E. H. Webster, Director.

The Permit System of Cream Buying. By D. S. Burch and W. F. Droke. (Bulletin 181, pp. 395-440, figs. 23.)

This bulletin describes the equipment of a cream station; gives instructions for receiving, sampling, testing, and paying for cream, testing milk and skim milk, the official testing and checking of weights, scales, and glassware, and a discussion of systems of examinations, permits, and inspection in the State, the control of the more general difficulties of the cream station, cream station conveniences, and bacteria affecting milk and cream.

The Kansas Feeding Stuffs Law Revision of 1911. By E. H. Webster. (Circular 18, pp. 7.)

A copy of the law as amended in 1911 is given with an explanation of its requirements.

Burn the Chinch Bug in Winter Quarters. By T. J. Headlee. (Circular 19, pp. 8, figs. 7.)

Methods of burning grass to destroy chinch bugs and the results of such work in Kansas in 1910 are briefly described.

The Hardy Catalpa. By C. A. Scott. (Circular 20, pp. 20, pls. 8, fig. 1.)

The commercial success, comparative value and characteristics of the hardy catalpa (*Catalpa speciosa*) and the common catalpa (*C. catalpa*) are pointed out, and methods of propagation, management, and care of the trees under Kansas conditions are described.

Better Butter for Kansas. (Circular 21, pp. 4, figs. 2.)

The relation between quality of butter and prices paid for butter and how to avoid poor butter are briefly discussed.

The Condition of Kansas Seed Corn. By E. G. Schafer. (Circular 22, pp. 3.)

The importance of testing seed corn is pointed out and directions for making the test are given.

KENTUCKY STATION, Lexington, M. A. Scovell, Director.

Soy Beans. By G. Roberts and E. J. Kinney. (Bulletin 161, pp. 107-131, figs. 2.)

Practical information is given regarding methods of planting, cultivating, rotating, harvesting, and threshing soy beans and the care of seed under Kentucky conditions, based on experiments at the station.

MARYLAND STATION, College Park, H. J. Patterson, Director.

Twenty-fourth Annual Report, 1911. (Annual Report, 1911, pp. XVIII + 276, pl. 1, figs. 66.)

This contains a brief administrative report by the director, a financial statement, and reprints of Bulletins 146-154.

MASSACHUSETTS STATION, Amherst, W. P. Brooks, Director.

Meteorological Observations. By J. E. Ostrander and R. N. Hallowell. (Meteorological Bulletin 278, pp. 4.)

This is a summary for February, 1912.

Meteorological Observations. By J. E. Ostrander and R. N. Hallowell. (Meteorological Bulletin 279, pp. 4.)

This is a summary for March, 1912.

MICHIGAN STATION, East Lansing, R. S. Shaw, Director.

Twenty-fourth Annual Report, 1911. (Annual Report, 1911, pp. 147-510, pls. 2, figs. 51.)

This contains the usual financial, executive, and departmental reports, summarizing the year's work of the station, articles on neutral ammonium citrate solutions, the use of Busch's "nitron" for the determination of nitrate nitrogen in soils and fertilizers, method of keeping crop records at the Michigan station, meteorological data, and reprints of Bulletins 262-264, Circulars 10 and 11, Special Bulletins 54 and 55, and Technical Bulletins 5-10.

MISSISSIPPI STATION, Agricultural College, E. R. Lloyd, Director.

Recent Cotton Experiments. By J. W. Fox et al. (Bulletin 155, pp. 3-29.)

Variety, topping, distance, and time of seeding and fertilizer tests with cotton at the different substations are reported and discussed.

MISSOURI COLLEGE STATION, Columbia, F. B. Mumford, Director.

Inspection and Analyses of Commercial Fertilizers. By P. F. Trowbridge et al. (Bulletin 99, pp. 117-181.)

Analyses and valuations of fertilizers inspected during the spring and fall of 1911 are reported.

How to Prolong the Life of Fence Posts. By J. A. Ferguson. (Circular 51, pp. 135-138, fig. 1.)

Brief directions for treating fence posts with creosote to increase their durability are given.

Growing a Woodlot from Seed. By J. A. Ferguson. (Circular 52, pp. 139-146, figs. 2.)

Brief directions are given for establishing forest nurseries and for planting and maintaining the farm woodlot.

NEBRASKA STATION, Lincoln, E. A. Burnett, Director.

Wheat Breeding Experiments. By E. G. Montgomery. (Bulletin 125, pp. 3-16, figs. 9.)

This bulletin discusses wheat culture in Nebraska, reviews the work of the station in improving Turkey Red wheat, and reports tests of improved strains of this variety by farmers during 1911.

Native Seed Corn. By E. G. Montgomery. (Bulletin 126, pp. 3-13, figs. 4.)

The results of tests of yield of native seed corn, as compared with seed from other States, and of seed in western Nebraska as compared with that from the eastern part of the State are reported.

NEVADA STATION, Reno, G. H. True, Director.

The Avoidance and Prevention of Frost in the Fruit Belts of Nevada.

By J. E. Church, jr., and S. P. Ferguson. (Bulletin 79, pp. 3-58, pls. 16.)

The results of experiments in orchard heating in three orchards of the State are reported; also a preliminary study of the temperature conditions in different parts of Nevada to determine the zones where prevention of killing frosts is feasible.

NEW YORK CORNELL STATION, Ithaca, L. H. Bailey, Director.

The Production of "Hothouse" Lambs. By E. S. Savage and G. W. Tailby, jr. (Bulletin 309, pp. 231-255, pl. 1, figs. 14.)

The results of eight seasons' work with the college flock to determine the profitability of the production of "hothouse" lambs under New York conditions are reported and discussed.

Soy Beans as a Supplementary Silage Crop. By E. R. Minns. (Bulletin 310, pp. 259-274, figs. 6.)

This bulletin discusses the value of soy beans to supplement corn fodder in the silo, and gives suggestions for growing the crop in the State, based on field observations and on experiments at the station and in cooperation with farmers.

The Fruit-tree Leaf-roller. By G. W. Herrick. (Bulletin 311, pp. 279-292, pls. 4, figs. 3.)

Previous work on the insect by others is reviewed and the results of studies of its life history, natural enemies, and methods of control are reported. Notes on the oblique-banded leaf-roller (*Archips rosaceana*) and the ugly-nest leaf-roller (*A. cerasivorana*), closely allied species, are also given. A bibliography is added.

Helps for the Dairy Butter Maker. By E. S. Guthrie. (Circular 11, pp. 17-20.)

Suggestions are given for making and marketing farm butter.

NEW YORK STATE STATION, Geneva, W. H. Jordan, Director.

The Pear Thrips. By P. J. Parrott. (Bulletin 343, pp. 3-28, pls. 5, figs. 5.)

This bulletin discusses briefly the distribution and economic importance of the pear thrips (*Euthrips pyri*), and reports the results of studies of its life history and habits, occurrence in the State, together with cooperative spraying experiments for its control. Notes on the effect of cultivation and of general care of the orchard on the insect are added.

The Grape Leaf-hopper and Its Control. By F. Z. Hartzell. (Bulletin 344, pp. 29-43, pls. 4, figs. 3.)

This is a continuation of work reported in Bulletin 331, and describes the life history, habits, and economic importance of the grape leaf-hopper (*Typhlocyba comes*), together with the results of spraying experiments with nicotine during 1911 for its control. A description is given of the automatic spraying adjustment devised for applying the spray.

Fighting Leaf Hoppers in the Vineyard. By F. H. Hall. (Bulletin 344, popular edition, pp. 3-8, figs. 3.)

This is a popular edition of this bulletin.

Seed Tests Made at the Station During 1911. By G. T. French. (Bulletin 345, pp. 45-58.)

The results of purity and germination tests of alfalfa, red and alsike clovers, timothy, and miscellaneous seeds are reported and discussed.

Quality of Farm Seeds in 1911. By F. H. Hall. (Bulletin 345, popular edition, pp. 4, fig. 1.)

This is a popular edition of this bulletin.

Influence of Crossing in Increasing the Yield of the Tomato. By R. Wellington. (Bulletin 346, pp. 57-76.)

Previous investigations by others on cross and self-fertilization are briefly reviewed, and the results of three seasons' experiments to test the effect of crossing strains of tomatoes on the yield in the F_1 , F_2 , F_3 , and F_4 generations are reported. A bibliography is added.

Crossing Tomatoes to Increase the Yield. By F. H. Hall. (Bulletin 346, popular edition, pp. 2-8.)

This is a popular edition of this bulletin.

NORTH CAROLINA COLLEGE STATION, West Raleigh, C. B. Williams, Director.

Profitable Poultry Raising. By J. S. Jeffrey. (Bulletin 221, pp. 87-108, figs. 7.)

Practical information is given on the raising, care, and management of poultry under North Carolina conditions.

NORTH DAKOTA STATION, Agricultural College, J. H. Worst,
Director.

Special Bulletin Food Department. (Special Food Bulletin 39, pp. 453-468, figs. 2.)

This bulletin reports analyses of samples of food products, beverages, drugs, and sugar beets, with notes on the proposed inspection of shipped cream, the condition of "Bob-Veal," sale of poultry, methods of improving the sanitary conditions of the city of Fargo, misbranding a condensed extract, headache wafers, adulterated foods, beverages, medicines, and miscellaneous products.

Special Bulletin Food Department. (Special Food Bulletin, 2 (1912), No. 2, pp. 17-32.)

The results of an examination of food products of a biscuit company, a cough sirup, and water proofing material, are reported together with a list of beverages registered for sale in the State for 1912, a copy of resolutions adopted by the Society of Equity of the State regarding the discontinuance of wheat and flour investigations, and notes on fake doctors, the standard for catsups, and the interpretation of the drug and patent medicine law regarding the labeling of products.

Special Bulletin Food Department. (Special Food Bulletin, 2 (1912), No. 3, pp. 33-48.)

This bulletin reports analyses of samples of food products and waters, tests of the milling and baking qualities and protein content of wheats and of the immersion refractometer in determining the solids in vinegar, examinations of herrings and a substitute for lard, together with a list of beverages registered, and notes on labeling of products and on chemically treated flour.

OHIO STATION, Wooster, C. E. Thorne, Director.

The Soy Bean and Cowpea. By C. G. Williams and F. A. Welton. (Bulletin 237, pp. 241-261, figs. 2.)

The varieties, uses, and culture of soy beans under Ohio conditions are discussed and the results of tests of varieties and rate and method of seeding soy beans and cowpeas are reported. A table is given showing the composition and digestibility of grain, silage, and hay of soy beans and cowpeas and other feeding stuffs.

Tobacco Culture in Ohio. Results of Investigations from 1903 to 1911. By A. D. Selby and T. Houser. (Bulletin 238, pp. 263-359, figs. 23.)

This bulletin describes the history of tobacco culture in Ohio and in the several tobacco districts of this State, and gives detailed, practical information regarding methods of production, cultivation, fertilizing, curing, and marketing the crop, based on experiments and observations by the station. A brief history and description of the more important varieties grown in the Miami Valley are also given.

Plans and Summary Tables of the Experiments at the Central Farm, Wooster, on the Maintenance of Soil Fertility Arranged for Reference in the Field. (Circular 120, pp. 95-115, figs. 5.)

This is the usual annual summary bringing results up to the end of 1911.

OKLAHOMA STATION, Stillwater, J. A. Wilson, Director.

Nineteenth and Twentieth Annual Report, 1910 and 1911. (Annual Report, 1910 and 1911, pp. 230, figs. 61.)

This contains a financial statement, reports by the director and by the heads of the different departments reviewing the work of the station for the years 1910 and 1911, and reprints of Bulletins 83-93, Circulars of Information 13 and 14, and Press Bulletins 171-180.

OREGON STATION, Corvallis, J. Withycombe, Director.

Apple Tree Anthracnose (*Gloeosporium malicorticis*). By H. S. Jackson. (Circular 17, pp. 2-4.)

The distribution, characteristics, and methods of treatment of the disease are briefly described.

Oregon Station Trap Nest. By J. Dryden. (Circular 19, pp. 4, figs. 3.)

The importance of keeping laying records of hens is pointed out, and the trap nest in use at the station and its construction are described.

PENNSYLVANIA STATION, State College, T. F. Hunt, Director.

Computation of Dairy Rations. By H. E. Van Norman. (Bulletin 114, pp. 3-20, fig. 1.)

This bulletin describes a short method of computing rations for dairy cows according to the net energy standards.

Preparation and Use of the Concentrated Lime-sulphur Spray. By J. P. Stewart. (Bulletin 115, pp. 3-23, figs. 3.)

The methods and precautions underlying the successful home preparation and use of lime-sulphur, based on work at the station since 1908, are discussed.

RHODE ISLAND STATION, Kingston, H. J. Wheeler, Director.

Cooperative Experiments for the Purpose of Studying the Soil Deficiencies of Various Sections of the State. By H. J. Wheeler. (Bulletin 149, pp. 47-79, pls. 2.)

This is a progress report of experiments begun in 1890 on a number of farms in different parts of the State to determine the lime and fertilizer requirements, and gives the results of such experiments obtained from 1907 to 1911.

TEXAS STATION, College Station, B. Youngblood, Director.

The Culture of Cigar Leaf Tobacco in Texas. By Q. Olson. (Bulletin 144, pp. 3-42, figs. 11.)

This bulletin discusses the culture of the cigar leaf tobacco under Texas conditions, and gives the results of experiments in cooperation with this department in crop rotation, fertilizer tests, seed selection, and breeding of tobacco.

UTAH STATION, Logan, E. D. Ball, Director.

Boys' Potato Clubs. How to Grow the Crop and Organization. By J. C. Hogenson. (Circular 5, pp. 3-15.)

Suggestions are given for growing potatoes under Utah conditions. Copies of a proposed constitution and by-laws for boys' potato clubs and of a potato score card are added.

VIRGINIA STATION, Blacksburg, S. W. Fletcher, Director.

Foliage Diseases of the Apple. By H. S. Reed, J. S. Cooley, and J. T. Rogers. (Bulletin 195, pp. 3-23, figs. 13.)

This bulletin describes the characteristics of frog-eye leaf spot, cedar rust, and apple scab diseases, and reports experiments for their control, including also the study of spray injury and its prevention.

VIRGINIA TRUCK STATION, Norfolk, T. C. Johnson, Director.

Preliminary Report on Tomato Culture. By L. L. Corbett. (Bulletin 8, pp. 157-171, figs. 5.)

The propagation, transplanting, marketing, and canning, and control of diseases and insects of tomatoes in eastern Virginia are discussed.

WEST VIRGINIA STATION, Morgantown, E. D. Sanderson, Director.

The Apple Orchard from Planting to Bearing Age. By A. L. Dacy. (Bulletin 136, pp. 163-206, figs. 22.)

The various operations involved in the planting of the apple orchard and its subsequent care up to the bearing age are described in this bulletin. A bibliography is added.

The Chestnut Bark Disease. By N. J. Giddings. (Bulletin 137, pp. 209-225, figs. 12.)

The history, characteristics, distribution, and methods of control of this disease are discussed with a view of bringing about some definite action in regard to its control and the introduction of general forestry work in the State.

WISCONSIN STATION, Madison, H. L. Russell, Director.

A Sclerotium Disease of Blue Joint and Other Grasses. By A. B. Stout. (Research Bulletin 18, pp. 207-261, pls. 8.)

Studies of the distribution, characteristics, and relations to various grasses of *Sclerotium rhizodes* are reported in detail. A bibliography is added.

Metabolic Water: Its Production and Rôle in Vital Phenomena. By S. M. Babcock. (Research Bulletin 22, pp. 87-181.)

The results of studies of the metabolic changes in seeds, plants, and insects to determine the source, production, and function of metabolic water in plant and in animal metabolism are reported in detail.

Chemical Analyses of Licensed Commercial Feeding Stuffs, 1911. By F. W. Woll. (Circular of Information 30, pp. 98.)

The results of inspection and analyses of feeding stuffs during 1911 are reported and discussed.

The "Coming of Age" of the Babcock Test. By H. L. Russell. (Circular of Information 32, pp. 3-18, figs. 7.)

This circular chronicles the influence of the Babcock test since its inception in 1890 on the development of dairy science and practice.



Issued July 20, 1912.

United States Department of Agriculture,

OFFICE OF EXPERIMENT STATIONS.

A. C. TRUE, Director.

LIST OF STATION PUBLICATIONS RECEIVED BY THE OFFICE OF EXPERIMENT STATIONS DURING MAY, 1912.

NOTE.—The station publications noted in this list are not distributed by the Department of Agriculture, but can usually be obtained, as far as the supply will permit, by applying to the stations issuing them.

ARKANSAS STATION, Fayetteville, C. F. Adams, Director.

Rice Blight. By J. L. Hewitt. (Bulletin 110, pp. 447-459.)

The results of a preliminary study of the characteristics and cause of blight in rice in Arkansas are reported and discussed with remedial measures. Notes on blast, leaf spots, smuts, black hulls, maggots, and wireworms in rice are added.

COLORADO STATION, Fort Collins, C. P. Gillette, Director.

Seepage and Return Waters—Detailed Measurements—The Cache la Poudre. By L. G. Carpenter. (Bulletin 180, pt. 2, pp. 45.)

This is part 2 of the series of seepage measurements on streams in Colorado, and deals with the measurements made on the Cache la Poudre River.

Alfalfa: The Relation of Type to Hardiness. By P. K. Blinn. Bulletin 181, pp. 3-16, figs. 15.)

The results of several seasons' tests of hardiness in relation to habits of growth of a number of southern and northern varieties of alfalfa under Colorado conditions are reported and discussed.

Twenty-fourth Annual Report, 1911. (Annual Report, 1911, pp. 75.)

This contains a financial statement and the usual executive and departmental reports reviewing the year's work of the station.

CONNECTICUT STATE STATION, New Haven, E. H. Jenkins, Director.

The Trade in Cottonseed Meal. By E. H. Jenkins. (Bulletin 170, pp. 4.)

The policy of the station in analyzing samples of cottonseed meal for sale in the State is briefly outlined for the information of buyers and dealers.

Tests of Summer Sprays on Apples, Peaches, etc. By G. P. Clinton and W. E. Britton. (Annual Report, 1911, pt. 5, pp. 347-406, pls. 8.)

The results of spraying experiments during 1911 on apples and peaches in different parts of the State are reported and summarized with those of the preceding year. Spraying tests on pears, quinces, plums, cherries, and currants during 1911 are also reported.

CONNECTICUT STORRS STATION, Storrs, L. A. Clinton, Director.

Silage Fermentation. By W. M. Esten and Christie J. Mason. (Bulletin 70, pp. 5-40, figs. 3.)

The results of studies of lactic acid and yeast fermentation and temperature fluctuations in silage are reported and discussed in relation to silo construction and kind of crop for silage. A bibliography of the literature is added.

Some Apple Insects of Connecticut. By G. H. Lamson. (Bulletin 71, pp. 45-83, figs. 33.)

This bulletin, which is based on publications of the station, and of this department and other experiment stations, describes insects of the apple tree which are considered of economic importance in Connecticut, together with spraying materials and appliances for their control.

DELAWARE STATION, Newark, H. Hayward, Director.

Annual Report of the Director for the Fiscal Year Ending June 30, 1911. (Bulletin 94, pp. 5-10.)

This contains the usual administrative report by the director and a financial statement for the year.

Top-dressing Grass Lands. The Sowing of Red Clover. By A. E. Grantham. (Bulleton 95, pp. 3-7.)

Suggestions are given as to kind, amount, and methods of application of fertilizers for top-dressing grass lands. Notes on methods of sowing and fertilizing clover, alone and with other grasses, are also given.

FLORIDA STATION, Gainesville, P. H. Rolfs, Director.

Annual Report, 1911. (Annual Report, 1911, pp. CVIII+XII, figs. 31.)

This contains reports by the director and by the heads of the different departments reviewing the year's work of the station, a financial statement, and a list of publications issued during the year.

IDAHO STATION, Moscow, W. L. Carlyle, Director.

A Report on the Milling Properties of Idaho Wheat. By J. S. Jones, H. P. Fishburn, and C. W. Colver. (Bulletin 72, pp. 3-65, pls. 2.)

The results of analyses and of milling and baking tests of different varieties of wheat grown in various localities of the State from 1908 to 1911, with a view of determining their market value, are reported and discussed.

ILLINOIS STATION, Urbana, E. Davenport, Director.

Comparison of Methods of Sampling Cream for Testing. By C. E. Lee and N. W. Hepburn. (Bulletin 153, pp. 544-574.)

The results of tests at the station creamery of the efficiency of different systems of sampling cream and their application and relation to creamery practice are reported and discussed.

What is the Matter with the Elms in Illinois? By S. A. Forbes. (Bulletin 154, pp. 22, pls. 6, figs. 4.)

Examinations of injuriously affected elm trees in southern Illinois for the condition of roots and the presence of borers, with a view of determining the cause of the diseased condition of the trees, are reported with remedial measures. Descriptions of the elm borer (*Saperda tridentata*) and of the reddish elm snout beetle (*Magdalalis armicollis*) are given.

Soil Fertility: Illinois Conditions, Needs, and Future Prospects. By C. G. Hopkins. (Circular 157, pp. 16.)

This is an address delivered before the Illinois State Farmers' Institute, and discusses the more important methods and results of Illinois soil investigations to date in relation to permanent systems of agriculture.

Tuberculosis: A Plain Statement of Facts Regarding the Disease, Prepared Especially for Farmers and Others Interested in Live Stock. (Circular 158, pp. 22, figs. 13.)

This is a reprint of matter prepared by the International Commission of the American Veterinary Medical Association, and which has been published in Bulletin 473 of the Bureau of Animal Industry of this department.

Twenty-fourth Annual Report, 1911. (Annual Report, 1911, pp. 16.)

This is a brief administrative report, giving a list of station publications, lines of work during the year, and a financial statement.

INDIANA STATION, La Fayette. A. Goss, Director.

Results of Cooperative Fertilizer Tests on Clay and Loam Soils. By J. B. Abbott and S. D. Conner. (Bulletin 155, pp. 99-132, figs. 7.)

The results of cooperative experiments on clay and on loam soils in different parts of the State with various fertilizer mixtures and materials on corn, wheat, oats, potatoes, tomatoes, and timothy are reported and discussed.

Housing Farm Poultry. By A. G. Philips. (Circular 37, pp. 16, figs. 21.)

The construction of poultry houses for Indiana conditions is described.

KANSAS STATION, Manhattan. E. H. Webster, Director.

The Stallion Law and the Farmer. (Circular 23, pp. 4.)

The question as to how the Kansas stallion law has aided owners of horses to breed intelligently is briefly discussed with a view of stimulating interest in the improvement of horses in the State.

Better Butter for Kansas. (Circular 24, pp. 4, figs. 3.)

The sources and effect of dirt and bacteria in cream and how to avoid such contamination are briefly discussed.

KENTUCKY STATION, Lexington. M. A. Scovell, Director.

Corn Production. By G. Roberts and E. J. Kinney. (Bulletin 163, pp. 173-200, figs. 4.)

Practical information is given regarding the soil adaptation, fertilizer requirements, methods of seed improvement, cultivation, and harvesting of corn under Kentucky conditions, based on experiments at different stations. Statistics from the United States Census Report on yield of corn by counties of the State are added.

The Catalpas and Their Allies. By H. Garman. (Bulletin 164, pp. 203-223, pls. 11, figs. 6.)

This bulletin describes the characteristics of the western catalpa (*Catalpa speciosa*) and of the southern catalpa (*C. bignonioides*), together with methods of propagation and notes on insect enemies and their control. The trumpet creeper (*Tecoma radicans*), the cross vine (*Bignonia capreolata*), and exotic species are also briefly described, as well as the life history and habits of the trumpet-creeper leaf miner (*Octotoma plicatula*), with methods for its control.

MASSACHUSETTS STATION, Amherst, W. P. Brooks, Director.

An Act to Regulate the Sale of Commercial Fertilizers. (Circular 32, pp. 4.)

A copy of the fertilizer law of the State as revised in 1911 is given.

Meteorological Observations. By J. E. Ostrander and R. N. Halowell. (Meteorological Bulletin 280, pp. 4.)

This is a summary for April, 1912.

MICHIGAN STATION, East Lansing, R. S. Shaw, Director.

Michigan Weeds. By W. J. Beal. (Bulletin 267, pp. 279-458, figs. 248.)

This bulletin describes briefly and illustrates the more important weeds of Michigan, and is intended to aid students and farmers in recognizing them. Methods of eradication are briefly discussed.

Tile Drainage. By J. A. Jeffery. (Special Bulletin 56, pp. 3-45, figs. 31.)

How to determine what lands are likely to need draining and the underlying principles of tile draining are briefly described, followed by detailed directions for laying out tiling systems.

MINNESOTA STATION, University Farm, St. Paul, A. F. Woods, Director.

Lighting with Alcohol and Kerosene. By R. M. West. (Bulletin 126, pp. 101-127, figs. 14.)

The results of tests of the relative lighting values of alcohol and kerosene in mantle and in wick lamps are reported and discussed.

MISSOURI COLLEGE STATION, Columbia, F. B. Mumford, Director.

Influence of Fatness of Cow on Per Cent of Fat in Milk. By C. H. Eckles. (Bulletin 100, pp. 183-202, figs. 12.)

Tests with a number of cows at the Missouri station to determine the variation in the per cent of butter fat in the early stages of lactation, as compared with that for the entire year and as affected by fatness of cow, are reported and discussed.

Report of the Director for the Year Ending June 30, 1911. By F. B. Mumford. (Bulletin 101, pp. 203-236, fig. 1.)

This contains the report of the director reviewing the year's work in the different departments of the station, and a financial statement.

Combating Orchard and Garden Enemies. By W. H. Chandler. (Bulletin 102, pp. 237-290, figs. 37.)

The more important insects and diseases of orchard and of garden fruits, together with methods of control under Missouri conditions, including the preparation of different sprays, are described. Notes on methods of protecting trees from rabbits and mice are added.

The Seeding of Cowpeas. By M. F. Miller. (Circular 53, pp. 147-150.)

Suggestions are given as to varieties, methods of seeding, harvesting, and thrashing cowpeas, and sowing in corn, under Missouri conditions.

Cooperative Experiments of the Department of Agronomy. By M. F. Miller and C. B. Hutchison. (Circular 54, pp. 151-162, fig. 1.)

Directions are furnished for cooperative experiments, including variety tests of corn, wheat, spring and winter oats, and barley; experiments with alfalfa, crimson clover, and fertilizing experiments with potatoes throughout the State; and grass experiments for the Ozark uplands.

Forage Crops for Swine. By L. A. Weaver. (Circular 55, pp. 163-166, figs. 3.)

This is a summary of the more important information originally published in Bulletin 95 of the station.

Index, Bulletins No. 83-96. (Index Number, 1912, pp. 9.)

An index to these bulletins is given with instructions for binding publications of the station.

NEBRASKA STATION, Lincoln, E. A. Burnett, Director.

Competition in Cereals. By E. G. Montgomery. (Bulletin 127, pp. 3-22, figs. 7.)

The results of plat experiments with wheat, oats, and corn to test the influence of rate of planting and size of seed on the size and yield of plants, within and as between varieties are reported.

Studies in Water Requirements of Corn. By E. G. Montgomery and T. A. Kiesselbach. (Bulletin 128, pp. 3-15, figs. 3.)

Studies of the relation of humidity of the air and of the effect of manuring soils of different degrees of fertility on the water requirements of the corn plant are reported.

Results of the Douglas County Cow Testing Association. By A. L. Haecker and J. H. Frandsen. (Bulletin 129, pp. 3-15, figs. 6.)

Records of milk and butter fat production and feed consumption of the best and of the poorest cow in each herd, and of individual cows in the various herds in this association, including the influence of length of lactation period, are given and discussed.

NEW JERSEY STATIONS, New Brunswick, J. G. Lipman, Director.

The F₁ Heredity of Size, Shape, and Number in Tomato Fruits. By B. H. A. Groth. (Bulletin 242, pp. 3-39, pls. 3, figs. 8.)

This is a continuation of work reported in Bulletins 228, 238, and 239 on the heredity and correlation of structural characters in the first generation of crosses.

NEW YORK STATE STATION, Geneva, W. H. Jordan, Director.

A Comparative Test of Lime-sulphur, Lead Benzoate, and Bordeaux Mixture for Spraying Potatoes. By F. C. Stewart and G. T. French. (Bulletin 347, pp. 77-84, pls. 4.)

The results of one season's tests of the relative merits of these spraying materials for potatoes are reported and discussed.

Lime-sulphur Dwarfs Potato Plants. By F. H. Hall. (Bulletin 347, popular edition, pp. 2, fig. 1.)

This is a popular edition of this bulletin.

NORTH DAKOTA STATION, Agricultural College, J. H. Worst, Director.

Special Bulletin Food Department. (Special Food Bulletin, 2 (1912), No. 4, pp. 49-80.)

The results of analyses of food products and of examinations of a number of headache remedies, a kidney remedy, and miscellaneous products are reported and briefly discussed. Analyses of and pot experiments with alkali soils are included.

OHIO STATION, Wooster, C. E. Thorne, Director.

Testing the Dairy Cow. By T. R. Middaugh. (Circular 122, pp. 121-134, figs. 13.)

The importance of keeping records of production of dairy cows is pointed out, and directions for the use of the Babcock test are given.

Carriers of Lime. By J. W. Ames. (Circular 123, pp. 135-142.)

The function of lime in the soil is briefly stated, and the composition and value of different forms and by-product materials containing lime are briefly discussed for the information of farmers.

OKLAHOMA STATION, Stillwater, J. A. Wilson, Director.

Artificial Insemination. By L. L. Lewis. (Bulletin 93, pp. 5-13, figs. 5.)

Directions are given, based on the work of the station, for using the artificial impregnator in horse breeding.

Varieties of Fruits Raised in Oklahoma. By N. O. Booth and D. C. Mooring. (Bulletin 95, pp. 3-48.)

The reports of farmers in response to letters of inquiry by the station as to their success in growing different varieties of orchard and of small fruits are tabulated in this bulletin for the general information of growers.

The Vitality of Reproductive Cells. By L. L. Lewis. (Bulletin 96, pp. 3-47, figs. 7.)

The results of experiments with hogs and horses to determine the time of liberation of the ovum from the ovary and to test the vitality of reproductive cells under natural and under artificial conditions, the effect of continuous service on the number and vitality and of temperature and chemicals on the vitality of the sperm cells are reported in detail.

Cotton and Cotton Culture. By O. O. Churchill and A. H. Wright. (Bulletin 97, pp. 3-23, figs. 7.)

Practical information is given regarding varieties, cultural methods, and the control of insects of cotton under Oklahoma conditions, based on experimental work at the station. Meteorological data for the State are added.

SOUTH CAROLINA STATION, Clemson College, J. N. Harper, Director.

The Southern Corn-root Worm in South Carolina. By W. A. Thomas. (Bulletin 161, pp. 3-7, fig. 1.)

A brief account is given of the life history and injuries of the so-called bud worm (*Diabrotica 12-punctata*) with remedial measures based on observations by the station in cooperation with this department.

Experiments with Varieties of Cotton. By J. N. Harper and F. G. Tarbox, jr. (Bulletin 162, pp. 3-8.)

The results of tests of varieties of cotton at the station during 1911 are given. The varieties are briefly described.

Changes in Composition of the Oat Plant as it Approaches Maturity.

By T. E. Keitt and F. G. Tarbox, jr. (Bulletin 163, pp. 3-16.)

Data are given showing the extent of production of oats in South Carolina as compared with other cereals, and the results of studies of the yield, the relative proportion of different parts of seed and plant, and changes in chemical composition of the oat plant at different stages of maturity, to determine the best time of harvesting the crop for different purposes, are reported.

Home Gardening in South Carolina. By C. C. Newman. (Bulletin 166, pp. 3-48, figs. 7.)

Practical information regarding the planting, fertilizing, and cultivating of the more important garden vegetables are given, with directions for spraying for the control of insects and diseases and a list of varieties recommended for South Carolina conditions.

Twenty-fourth Annual Report, 1911. (Annual Report, 1911, pp. 65.)

This contains the usual executive, departmental, and financial reports of the station for the fiscal year and special articles on the following topics: Cotton anthracnose, the detection of anthracnose in cottonseed, and sweet potato rots.

SOUTH DAKOTA STATION, Brookings, J. W. Wilson, Director.

Effects of Alkali Water on Dairy Products. By C. Larsen, W. White, and D. E. Bailey. (Bulletin 132, pp. 218-254.)

The results of experiments with barren and pregnant cows to determine the effect of alkali water on the physical characteristics, chemical composition, coagulability, and composition of the ash of milk, and the quality of butter and of cheese are reported and discussed. Tests of the effect of washing butter in alkali water on the quality of the butter are included.

Alfalfa as a Field Crop in South Dakota. By A. N. Hume and S. Garver. (Bulletin 133, pp. 257-284, figs. 6.)

Plat experiments at Brookings, Highmore, and on various farms in the State, conducted in cooperation with this department to test the yield of different strains of alfalfa, are reported and discussed. Tests of hardiness, germinating capacity, and of the effect of scratching the seed coat with a preparator on the completeness and quickness of germination are also reported.

TEXAS STATION, College Station, B. Youngblood, Director.

The Active Potash of the Soil and its Relation to Pot Experiments.

By G. S. Fraps. (Bulletin 145, pp. 3-39, figs. 3.)

The results of studies of the active potash of the soil as measured by its solubility in fifth-normal nitric acid are reported and correlated with pot experiments with different crops on a large number of Texas soils.

WASHINGTON STATION, Pullman, R. W. Thatcher, Director.

Thousand-headed Kale and Marrow Cabbage. By L. J. Chapin.

(Bulletin 6, Special Series, pp. 3-8, fig. 1.)

The feeding value, culture, and seed production of kale and marrow cabbage are briefly described, with methods of combating the root maggot.

WEST VIRGINIA STATION, Morgantown, E. D. Sanderson, Director.

Commercial Fertilizers Inspection, 1911. By B. H. Hite and F. B. Kunst. (Bulletin 138, pp. 229-273.)

The results of inspection and analyses of fertilizers for 1911 are reported and briefly discussed.

Condition of Seed Corn in West Virginia and How to Test It. By I. S. Cook, jr. (Circular 5, pp. 4, fig. 1.)

The results of tests of seed corn from different localities of the State are stated, with brief directions for making the germination test.

WISCONSIN STATION, Madison, H. L. Russell, Director.

Cranberry Bog Management for Wisconsin. By O. G. Malde. (Bulletin 219, pp. 25, figs. 13.)

The management of the bog under Wisconsin conditions from the time of planting up to the time of harvesting is described in detail on the basis of experiments at the station.

Better Cream Through Grading. A New Butter Moisture Test. By G. H. Benkendorf. (Bulletin 220, pp. 14, figs. 2.)

This bulletin proposes a system of cream grading, describes the method in use at the university creamery for determining the acid in cream, and a new apparatus for determining the moisture content of butter.

Analyses of Licensed Commercial Fertilizers, 1912. By F. W. Woll. (Circular of Information 33, pp. 12.)

The results of inspection and analyses of fertilizers for sale in the State are reported and discussed.



Issued August 10, 1912.

United States Department of Agriculture,

OFFICE OF EXPERIMENT STATIONS.

A. C. TRUE, Director.

LIST OF STATION PUBLICATIONS RECEIVED BY THE OFFICE OF EXPERIMENT STATIONS DURING JUNE, 1912.

NOTE.—The station publications noted in this list are not distributed by the Department of Agriculture, but can usually be obtained, as far as the supply will permit, by applying to the stations issuing them.

ALABAMA COLLEGE STATION, Auburn, J. F. Duggar, Director.

Fattening Beef Calves in Alabama. By D. T. Gray and W. F. Ward. (Bulletin 158, pp. 177-224e, figs. 17.)

The results of feeding experiments to test the practicability under Alabama conditions of fattening calves in winter, of wintering calves and fattening for the next summer on pasture, and the relative value as fattening rations for calves of (1) cottonseed meal and hulls, corn-and-cob meal, and alfalfa hay, and (2) cottonseed meal, cottonseed hulls, and peavine hay are reported and discussed.

Twenty-second, Twenty-third, and Twenty-fourth Annual Reports, 1909-1911. (Annual Reports, 1909, pp. 31; 1910, pp. 32; 1911, pp. 43.)

These reports contain the usual financial statements and the executive and departmental reports reviewing the work of the station during the years 1909, 1910, and 1911, respectively.

CALIFORNIA STATION, Berkeley, E. J. Wickson, Director.

University Farm School. (Circular 77, pp. 23, figs. 13.)

The three-year courses of study for 1912-13 of the University Farm School are announced, and the character of the work of the school is briefly described.

CONNECTICUT STATE STATION, New Haven, E. H. Jenkins, Director.

Correlation and Inheritance in *Nicotiana tabacum*. By H. K. Hayes. (Bulletin 171, pp. 45, pls. 5.)

"The objects of this paper are twofold: first, to give some new facts regarding the correlation and inheritance of plant characters in *N. tabacum*; second, to show how these facts may be applied by plant breeders to the production of new improved forms."

A bibliography is added.

CONNECTICUT STORRS STATION, Storrs, L. A. Clinton, Director.

Biennial Report, 1910-11. (Biennial Report, 1910-11, pp. XL+601, pls. 10, figs. 216.)

This contains the financial, executive, and departmental reports for the years 1909-10 and 1910-11, reprints of Bulletins 59 to 69, and general weather reviews for 1910 and 1911.

HAWAII FEDERAL STATION, Honolulu, E. V. Wilcox, Special Agent in Charge.

Cotton in Hawaii. By C. K. McClelland and C. A. Sahr. (Press Bulletin 34, pp. 24, figs. 2.)

Data for yield and tests of methods of pruning, fertilizing, and cultivating the Caravonica and sea island varieties of cotton under Hawaiian conditions are reported and discussed.

INDIANA STATION, Lafayette, A. Goss, Director.

Commercial Fertilizers. By W. J. Jones, jr., et al. (Bulletin 156, pp. 135-232, fig. 1.)

This bulletin summarizes the requirements of the Indiana fertilizer law, and reports the results of fertilizer inspection during 1911.

Unproductive Black Soils. By S. D. Conner and J. B. Abbott. (Bulletin 157, pp. 235-264, figs. 5.)

The distribution in Indiana and characteristics of the black or peat soil are briefly discussed, and the results of cooperative fertilizer experiments in a number of counties of the State to test the value of different fertilizer materials and mixtures for their improvement are reported. Chemical analyses of samples of the soil are also reported.

IOWA STATION, Ames, C. F. Curtiss, Director.

Orchard Heating. By L. Greene. (Bulletin 129, pp. 129-164, figs. 17.)

The results of tests of different heaters in three orchards of the State during the spring of 1912 are reported with practical suggestions for carrying out the work.

The Pear Slug. By R. L. Webster. (Bulletin 130, pp. 165-192, figs. 14.)

The past history, destructiveness, and distribution of this insect are briefly discussed, and studies of its life history, habits, and natural and predaceous enemies are reported, together with results of spraying experiments for its control.

A bibliography is added.

Four New Fungus Diseases in Iowa. By L. H. Pammel and Charlotte M. King. (Bulletin 131, pp. 199-221, figs. 14.)

Results of studies of the characteristics, means of spreading, and methods of control of timothy rust (*Puccinia phlei-pratensis*), alfalfa rust (*Uromyces striatus*), apple canker (*Nummularia discretata*), and onion smut (*Urocystis cepulae*) are reported.

A bibliography of the literature is added.

KENTUCKY STATION, Lexington, M. A. Scovell, Director.

Investigations of the Etiology of Infectious Abortion of Cows and Mares. By E. S. Good. (Bulletin 165, pp. 227-299, pls. 13.)

Part 1 of this bulletin reviews the work of other investigators on contagious abortion in cattle and reports studies on the morphology, physiology, and

cultural characteristics of the *Abortus* bacillus which was isolated from a number of aborted cases in cattle. Part 2 reports the isolation of a bacillus from aborted cases in mares and jennets.

MASSACHUSETTS STATION, Amherst, W. P. Brooks, Director.

Meteorological Observations. By J. E. Ostrander and R. N. Halowell. (*Meteorological Bulletin* 281, pp. 4.)

This is a summary for May, 1912.

MICHIGAN STATION, East Lansing, R. S. Shaw, Director.

Sandy Soils of Western and Northern Michigan. By J. A. Jeffery. (*Circular* 16, pp. 101-105.)

Practical information is given regarding methods of management and crop adaptation of the Miami sandy soils of the State.

MINNESOTA STATION, University Farm, St. Paul, A. F. Woods, Director.

Farm Management: Organization of Research and Teaching. By W. M. Hays et al. (*Bulletin* 125, pp. 96, pls. 5, figs. 57.)

The aim of this bulletin is to bring together the more important results of investigations conducted in cooperation with this department in crop rotation, the cost of farm products, and methods of teaching farm management, with a view of assisting farmers "in reorganizing their farms, and in installing new methods of management, and also with a view to bringing the subject matter of farm management into better form, making it useful to those who are teaching farm management in the rural and higher agricultural schools."

Nineteenth Annual Report, 1911. (*Annual Report, 1911*, pp. XLIV+188+XI, pl. 1, figs. 38.)

This contains a financial statement, the director's report on the year's work of the different departments of the station, and reprints of Bulletins 121 to 124.

MISSISSIPPI STATION, Agricultural College, E. R. Lloyd, Director.

Inspection and Analyses of Commercial Feeding Stuffs on Sale in the State. (*Bulletin* 153, pp. 4-31.)

This bulletin reports the results of inspection and analyses of feeding stuffs collected during the season of 1910-11.

Inspection and Analyses of Commercial Feeding Stuffs on Sale in the State. (*Bulletin* 154, pp. 3-39.)

The results of inspection and analyses of feeding stuffs collected during the season of 1910-11 are reported.

Inspection and Analyses of Cottonseed Meal on Sale in the State. (*Bulletin* 156, pp. 3-33.)

The results of inspection and analyses of cottonseed meal for the spring of 1911-12 are reported and briefly discussed.

Report of Work at the Delta Branch Experiment Station for 1911. By G. B. Walker. (*Bulletin* 157, pp. 3-23, figs. 5.)

The more important results in different lines of work at the station during the year with drainage, fertilizers, small grains, cotton, alfalfa, peanuts, cattle, hogs, and mules are summarized.

Inspection and Analyses of Commercial Fertilizers on Sale in Mississippi. (*Circular* 34, pp. 3-31.)

This is a report of the inspection and analyses of fertilizers for the season 1911-12.

MISSOURI COLLEGE STATION, Columbia, F. B. Mumford, Director.

The Silo for Missouri Farmers. By C. H. Eckles. (Bulletin 103, pp. 291-305, figs. 4.)

Practical information is given regarding the yield of corn silage per acre, the size, kinds, and filling of silos, the kind and stage of cutting of crops, and the feeding value of silage under Missouri conditions.

The Evergreen Bagworm. By L. Haseman. (Bulletin 104, pp. 305-330, figs. 16.)

Studies of the distribution of the *Thridopteryx ephemeraeformis* in Missouri, its food plants, life history and habits, injuries, and natural enemies are reported with means of control.

NEW HAMPSHIRE STATION, Durham, J. C. Kendall, Director.

Results of Seed Tests for 1911. By F. W. Taylor. (Bulletin 156, pp. 4-14.)

The results of purity and germination tests of seeds on the market in New Hampshire during 1911 are reported. The text of the agricultural seed law of the State is given with explanations.

NEW MEXICO STATION, State College, L. Foster, Director.

The Grasses and Grass-like Plants of New Mexico. By E. O. Wooton and P. C. Standley. (Bulletin 81, pp. 3-176, pls. 12, figs. 32.)

This bulletin gives a popular discussion of the economic importance and distribution of grasses and grass-like plants of New Mexico. A technical description of each species and a key for their determination are included.

Growing Denia Onion Seed. By F. Garcia. (Bulletin 82, pp. 5-29, figs. 8.)

The adaptability of the Denia onion for New Mexico is pointed out and results of tests in growing the onion from home-grown seed are reported and discussed.

Twenty-second Annual Report, 1911. (Annual Report, 1911, pp. 57, figs. 4.)

This contains a financial statement and the usual executive and departmental reports reviewing the year's work of the station. The meteorological report includes data for the past 7 years.

NEW YORK CORNELL STATION, Ithaca, L. H. Bailey, Director.

Germination of Seed as Affected by Sulphuric Acid Treatment. By H. H. Love and C. E. Leighty. (Bulletin 312, pp. 293-336, figs. 9.)

This bulletin reviews previous work by others on methods of treating seeds to increase their viability, and reports the results of tests of the effect of concentrated sulphuric acid (specific gravity 1.83) on the germinating power of different hard leguminous, weed, and cotton seed, with suggestions for applying the treatment.

The Production of New and Improved Varieties of Timothy. By H. J. Webber et al. (Bulletin 313, pp. 337-381, pls. 10, figs. 12.)

Experimental methods used in the breeding of new varieties of timothy at the Cornell station are described, and the results of plat tests of yield of 17 of the new varieties as compared with ordinary timothy are reported and discussed. Methods of improving timothy on the farm are described. An appendix contains a review of a paper on the influence of maturity upon the value of timothy hay.

Cooperative Tests of Corn Varieties. By E. R. Minns. (Bulletin 314, pp. 395-410, figs. 3.)

The results of three seasons' cooperative tests with different dent and flint varieties of corn to determine their adaptation to different parts of the State are reported.

NEW YORK STATE STATION, Geneva, W. H. Jordan, Director.

Analyses of Materials Sold as Insecticides and Fungicides. (Bulletin 348, pp. 85-98.)

Analyses of the more important insecticides and fungicides on sale in the State with name and address of manufacturer are tabulated.

Phytin and Phosphoric Acid Esters of Inosite. By R. J. Anderson. (Technical Bulletin 19, pp. 3-17.)

Previous investigations by others are reviewed, and studies of the chemical constitution and properties of phytin and its derivatives and related compounds (phytic acid, phytates, and tetra-phosphoric ester of inosite) are reported.

NORTH DAKOTA STATION, Agricultural College, J. H. Worst, Director.

Special Bulletin Food Department. (Special Food Bulletin, 2 (1912), No. 5, pp. 81-96.)

This bulletin reports the results of analyses of mince-meats and other food products, and vinegar, describes a formaldehyde mixture for poisoning flies, and gives notes on miscellaneous products.

OHIO STATION, Wooster, C. E. Thorne, Director.

Apple Blister Canker and Methods of Treatment. By W. O. Gloyer. (Circular 125, pp. 149-161, figs. 7.)

The results of a study of the distribution, injury, and methods of control under Ohio conditions of the apple blister canker (*Nummularia discreta*) are reported.

Dressings for Pruning Wounds of Trees. By A. D. Selby. (Circular 126, pp. 163-170.)

Suggestions are given regarding the preparation and application of various kinds of dressings or protective coverings for wounds of trees.

Farm Management Field Studies and Demonstration Work in Ohio. By L. H. Goddard. (Circular 127, pp. 171-182, figs. 2.)

The plans adopted by the Ohio station in cooperation with the Office of Farm Management of this department for reorganizing the extension work of the station are outlined and the purpose and character of the work to be undertaken are discussed.

OKLAHOMA STATION, Stillwater, J. A. Wilson, Director.

Hog Feeding. By W. A. Linklater. (Bulletin 94, pp. 3-16, figs. 2.)

The results of feeding experiments to test the value of alfalfa pasture with and without corn and of cottonseed meal as a supplement for corn are reported. Methods of management and breeds of hogs under Oklahoma conditions are briefly described.

PENNSYLVANIA STATION, State College, T. F. Hunt, Director.

Corn Growing in the East. By T. F. Hunt. (Bulletin 116, pp. 16, figs. 5.)

The importance of increasing the acreage of corn in the East is pointed out, and practical information on methods of improving the corn crop, based on systems of fertilizing and crop rotations at the station, is given.

SOUTH CAROLINA STATION, Clemson College, J. N. Harper, Director.

Cotton Anthracnose. By H. W. Barre. (Bulletin 164, pp. 3-22, pl. 1, figs. 6.)

This is a nontechnical summary of the present knowledge of anthracnose and its control, more particularly of the results of investigations which have been carried on by the author during the past four years and partly published in the reports of the station for the years 1909, 1910, and 1911.

Sweet Potato Investigation. By T. E. Keitt. (Bulletin 165, pp. 3-44.)

This is a summary of investigations which have been carried on at the station for several years past, mainly to determine the value of the sweet potato for starch and other industrial purposes.

Cotton Anthracnose: Survey of the Situation in South Carolina. By H. W. Barre. (Circular 1, pp. 3.)

Brief notes regarding the symptoms, extent, and control of the disease are given with a list of questions regarding its prevalence used in an anthracnose survey of the State.

Tables of Field Crops. By J. N. Harper. (Circular 2, pp. 18.)

Information in tabular form is given regarding methods of seeding, cultivating, fertilizing, rotating, harvesting, and control of insects of the more important field crops for South Carolina conditions.

The "Williamson Plan" of Corn Culture. (Circular 3, pp. 8.)

This gives a description of the Williamson method reprinted from Bulletin 124.

Home Mixing and General Fertilizer Formulas. (Circular 4, pp. 7.)

This circular gives 40 formulas for the home mixing of fertilizers.

Results of Cooperative Experimental Work for 1911. By R. G. Tarbox, jr. (Circular 5, pp. 19.)

The results of a large number of cooperative experiments in various sections widely distributed throughout the State to test the yield of different varieties of cotton and of corn with various kinds of fertilizers are stated.

SOUTH DAKOTA STATION, Brookings, J. W. Wilson, Director.

More Winter Dairying in South Dakota. By C. Larsen. (Bulletin 134, pp. 285-305, figs. 5.)

This bulletin discusses the chief advantages of winter dairying in South Dakota, and gives suggestions regarding the construction of dairy barns, silos, crops for silage, and herd improvement.

Trials with Millets and Sorghums for Grain and Hay in South Dakota. By A. N. Hume and M. Champlin. (Bulletin 135, pp. 308-336, figs. 8.)

The results of field experiments in cooperation with this department with different varieties of introduced millets and sorghums to test their value for grain and for hay under South Dakota conditions are reported, with suggestions for growing and improving the crops.

TEXAS STATION, College Station, B. Youngblood, Director.

The Forms of Phosphorus in Cottonseed Meal. By J. B. Rather. (Bulletin 146, pp. 3-16.)

Chemical studies of the compounds obtained by extraction of cottonseed meal with water, hydrochloric acid, and ammonia are reported.

VERMONT STATION, Burlington, J. L. Hills, Director.

Twenty-fourth Annual Report, 1911. (Annual Report, 1911, pp. XXXII+472, pls. 18, figs. 50.)

This contains a financial statement, the director's report reviewing the year's work, and reprints of Bulletins 155 to 160 and Circulars 6 to 8.

VIRGINIA STATION, Blacksburg, S. W. Fletcher, Director.

Crop Rotation and Fertilizer Experiments with Sun-cured Tobacco.

By W. W. Green. (Bulletin 196, pp. 20, figs. 9.)

Experiments conducted in cooperation with this department to determine profitable methods of fertilizing and rotating tobacco that will maintain the permanent fertility of the soil are reported.

Growing and Curing Sun-cured Tobacco. By W. W. Green. (Bulletin 197, pp. 14, figs. 7.)

Methods of fertilizing and rotating tobacco as based on experiments reported in Bulletin 196 are described, including information regarding varieties, seed plants, topping, control of the hornworm, and methods of curing tobacco.

Crop Rotation and Fertilizer Experiments with Bright Tobacco.

By R. P. Cocke. (Bulletin 198, pp. 20, figs. 7.)

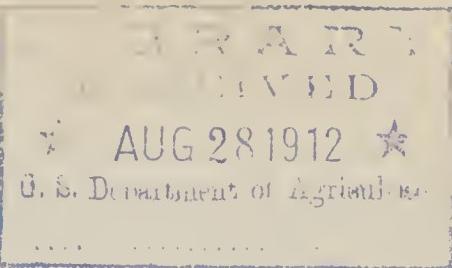
Several seasons' experiments in cooperation with this department to determine a permanent system of crop rotation and fertilizing for the profitable production of bright tobacco under Virginia conditions are reported.

WISCONSIN STATION, Madison, H. L. Russell, Director.

Relation of Soil Bacteria to Evaporation. By C. Hoffmann. (Research Bulletin 23, pp. 183-215, fig. 1.)

Experiments with different soil types under varying conditions to determine the effect of the bacterial activity of the soil on the evaporation and movement of soil water are reported.





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Issued August 22, 1912.

United States Department of Agriculture,

OFFICE OF EXPERIMENT STATIONS.

A. C. TRUE, Director.

LIST OF STATION PUBLICATIONS RECEIVED BY THE OFFICE OF EXPERIMENT STATIONS DURING JULY, 1912.

NOTE.—The station publications noted in this list are not distributed by the Department of Agriculture, but can usually be obtained, as far as the supply will permit, by applying to the stations issuing them.

ALABAMA TUSKEGEE STATION, Tuskegee Institute, G. W. Carver, Director.

Dairying in Connection with Farming. By A. A. Turner. (Bulletin 22, pp. 3-11.)

This is a brief discussion of the advantages of dairying in connection with farming in the South.

ARIZONA STATION, Tucson, R. H. Forbes, Director.

Native Cacti as Emergency Forage Plants. Nutritive Value of Cholla Fruit. By J. J. Thornber and A. E. Vinson. (Bulletin 67, pp. 451-519, pls. 8, fig. 1.)

This bulletin reports in detail the results of studies of the botanical characteristics and the economic aspects of cacti as forage plants and the chemical composition and nutritive value of cactus forage, especially the cholla fruit fed to sheep.

Twenty-second Annual Report, 1911. (Annual Report, 1911, pp. 515-572, pl. 1, figs. 2.)

This contains a financial statement and the usual administrative and departmental reports reviewing the year's work of the station.

CALIFORNIA STATION, Berkeley, E. J. Wickson, Director.

Announcement of Farmers' Short Courses for 1912 at the University Farm, Davis, California. (Circular 78, pp. 3-23, figs. 12.)

The farmers' short courses for 1912 in the College of Agriculture of the University of California are briefly described.

List of Insecticide Dealers. By C. W. Woodworth. (Circular 79, pp. 23.)

A list of firms licensed to sell insecticides in the State is given, with a synopsis of the insecticide law.

COLORADO STATION, Fort Collins, C. P. Gillette, Director.

Colorado Climatology. By R. E. Trimble. (Bulletin 182, pp. 3-56.)

Meteorological data compiled by the station at Fort Collins and the substations at Rockyford, Cheyenne Wells, Long's Peak, and Cowdrey, are tabulated and the more important climatic characteristics are briefly discussed.

CONNECTICUT STATE STATION, New Haven, E. H. Jenkins, Director.

The Net Weight or Volume of Food Products which are Sold in Packages. By J. P. Street. (Bulletin 172, pp. 35.)

The text of the Connecticut law on this subject is given, together with the results of inspection and weighings of cans and packages of food products on sale in the State. Tests of shrinkage of weight in dried fruits pending their sale are included.

The Mosquito Plague of the Connecticut Coast Region and How to Control It. By W. E. Britton. (Bulletin 173, pp. 14, pls. 4, figs. 2.)

The more important salt-marsh mosquitoes *Culicx cantator* and *C. sollicitans*, and the extent and conditions of the salt-marsh areas of the State, with drainage and other methods of mosquito control, are briefly described to supply information to those who are now engaged in the work of controlling mosquitoes, and to direct the efforts of others.

Inheritance in Corn. By H. K. Hayes. (Annual Report, 1911, pt. 6, pp. 407-445+XVIII, pls. 8.)

This contains a summary of the more important practical results of six years' investigations by the station on the inheritance of characteristics in corn to show what can be done to detect and cull out the accidental hybrid seed, and the way in which desirable qualities are inherited, and forms a part of the annual report. A financial statement and index are included.

FLORIDA STATION, Gainesville, P. H. Rolfs, Director.

Citrus Scab. By H. S. Fawcett. (Bulletin 109, pp. 47-60, figs. 8.)

The history of citrus scab (*Cladosporium citri*) is reviewed and the results of studies of the characteristics of its casual fungus and its control are reported, with preventative measures. A bibliography is added.

Native and Grade Cattle Breeding. By J. M. Scott. (Bulletin 110, pp. 59-72, figs. 9.)

Experiments in the breeding and raising of steers from native cows bred to bulls of the leading beef breeds, as compared with native bulls, are reported.

HAWAII FEDERAL STATION, Honolulu, E. V. Wilcox, Special Agent in Charge.

Insects Injurious to Corn. By D. T. Fullaway. (Bulletin 27, pp. 20, figs. 8.)

Species of wireworms, cutworms, army worms, plant lice, leaf hopper, defoliating caterpillars, Hawaiian earworms, grain moths, and weevils, and their injuries to corn, with methods of control, are briefly described.

INDIANA STATION, Lafayette, A. Goss, Director.

Hominy Feed for Fattening Hogs. By J. H. Skinner. F. G. King. (Bulletin 158, pp. 267-279.)

Feeding experiments with hogs to test the comparative value of hominy feed and corn when supplemented (1) with shorts and (2) with tankage, are reported.

KENTUCKY STATION, Lexington, M. A. Scovell, Director.

The Diagnosis of Infectious Abortion in Cattle. By F. M. Surface. (Bulletin 166, pp. 303-365, pl. 1, figs. 4.)

The symptoms of contagious abortion in cattle and microscopical and bacteriological methods of examining abortion germs are briefly described, and the abortion, agglutination, and complement fixation methods of diagnosing the disease are described in detail, together with the results of experimental work at the station in testing a number of herds of the State by the agglutination and complement fixation methods. Practical suggestions for eradicating the disease are added.

MAINE STATION, Orono, C. D. Woods, Director.

Finances, Meteorology, Index. (Bulletin 197, pp. 329-340+XII.)

This bulletin contains the meteorological observations, financial statement, the index to the bulletins issued in 1910-11, and the introduction to the annual report of the station, including a list of publications.

Orchard Spraying Experiments. By W. W. Bonns. (Bulletin 198, pp. 32, pls. 5.)

The results of experiments for 1910 are briefly reviewed and a continuation of the work during 1911 to determine the relative value of lime-sulphur, Bordeaux mixture, and arsenate of lead, and the relation of these sprays to foliage and fruit injury is reported. An appendix gives directions for preparing lime-sulphur solutions.

Orchard Notes. By W. W. Bonns. (Bulletin 199, pp. 33-56, pls. 8, fig. 1.)

This is a summary of the more important results of two seasons' observations and experimental work at Highmoor Farm in the renovation of run-down or neglected orchards, including tests of sprays, pasturing, and fertilizers. Notes on a method of emasculating blossom buds for pollination purposes, abnormal fruits, and winter-killing are added.

The Fungus Gnats of North America. By O. A. Johannsen. (Bulletin 200, pp. 55-146, pls. 7.)

This is the conclusion of a series of bulletins and classifies and describes genera and species of the subfamilies Mycetophilinæ and Sciarinæ.

Spirit of Nitrous Ether. By H. H. Hanson and A. K. Burke. (Bulletin 201, pp. 147-158, fig. 1.)

Determinations of the loss of ethyl nitrite in samples of sweet spirit of niter, when kept according to the directions of the United States Pharmacopœia, as compared with unfavorable conditions are reported. Tests of the accuracy of the modified method of analysis with and without potassium bicarbonate, as compared with the old and the new Pharmacopœia methods, are also reported.

Official Inspections. (Official Inspections 37, pp. 13-24.)

The results of inspection and analyses of bottled soda water and ice cream during 1911 are reported, with a list of contested cases of violation.

Official Inspections. (Official Inspections 38, pp. 25-72.)

Analyses of samples of feeding stuffs for the year are reported, with a list of feeding stuffs registered for sale.

Official Inspections. (Official Inspections 39, pp. 73-88.)

The results of inspection and analyses of vinegar, catchup, pickles, chestnuts, salt, molasses, a proprietary brine, cream of tartar, saleratus, rice, and cordials are reported, with notes on the requirements of the food law and a list of cases for hearings and prosecutions.

Official Inspections. (Official Inspections 40, pp. 89-100.)

This is a report of inspection and analyses of nitrous ether, tincture of iodin, sweet oil, and black antimony on sale in the State during 1911.

MASSACHUSETTS STATION, Amherst, W. P. Brooks, Director.

Meteorological Observations at the Massachusetts Agricultural Experiment Station. By J. E. Ostrander and H. W. Angier. (Meteorological Bulletin 282, pp. 4.)

This is a summary for June, 1912.

NEBRASKA STATION, Lincoln, E. A. Burnett, Director.

Fattening Hogs in Nebraska. By W. P. Snyder. (Bulletin 124, pp. 3-71.)

This is a detailed report of hog-feeding experiments at the station, the results of which have been summarized in Bulletin 123.

Forage Rations for Growing Horses. By W. P. Snyder. (Bulletin 130, pp. 3-15, figs. 2.)

Tests of the value of alfalfa hay and alfalfa pasture, as compared with prairie hay, cane hay, and prairie pasture, for colts are reported.

NEW HAMPSHIRE STATION, Durham, J. C. Kendall, Director.

Feeding-stuffs Inspection for 1912. By B. E. Curry and T. O. Smith. (Bulletin 158, pp. 3-30.)

The text of the feeding-stuffs law is given and the results of inspection and analyses of feeding stuffs are reported with explanations.

Fertilizers for Carnations. By D. Lumsden. (Bulletin 159, pp. 3-14, figs. 4.)

Pot experiments to determine the relative value of nitrate of soda, muriate of potash, ground bone, a proprietary fertilizer, and hen manure, as top-dressings for carnation plants and the effect of the treatment on the keeping quality of the flower are reported.

NEW JERSEY STATIONS, New Brunswick, J. G. Lipman, Director.

Annual Report, 1910. (Annual Report, 1910, pp. XVIII+424, pls. 60, figs. 5.)

This contains a financial statement and brief summary of the year's work by the director and detailed accounts of the work in the departments of chemistry, animal husbandry, horticulture, soil chemistry and bacteriology, biology, botany, and entomology. A report on mosquito work for 1910 is also included.

NEW YORK CORNELL STATION, Ithaca, L. H. Bailey, Director.

Fungus Flora of the Soil. By C. N. Jensen. (Bulletin 315, pp. 415-501, figs. 33.)

This bulletin reviews previous studies of soil fungi by others and describes the experimental methods used by the author in the isolation of a large number of facultative parasites and obligate saprophytes from soils. Descriptions of the saprophytes are given.

RHODE ISLAND STATION, Kingston, H. J. Wheeler, Director.

Studies on Fowl Cholera: II. The Rôle of an Homologous Culture of Slight Virulence in the Production of Active Immunity in Rabbits. By P. B. Hadley. (Bulletin 150, pp. 81-161.)

This is a continuation of Bulletin 146 and reports in detail the results of immunization experiments in rabbits, guinea pigs, fowls, and pigeons, with a type of fowl-cholera organism, and with blood serum from immune rabbits. A bibliography of the literature is added.

Analyses of Feeding Stuffs. By B. L. Hartwell. (Inspection Bulletin, April, 1912, pp. 3-20.)

The results of inspection and analyses of feeding stuffs for 1911-12 are reported and briefly discussed.

SOUTH CAROLINA STATION, Clemson College, J. N. Harper, Director.

Reclamation of Crawfish Lands. By W. D. Garrison. (Bulletin 167, pp. 3-12, pls. 10.)

Experiments during 1909-10 in tile draining and the production of different crops under application of various fertilizer mixtures and materials, on the wet lands of the lower coastal region of the State to determine their agricultural value, are reported.

TEXAS STATION, College Station, B. Youngblood, Director.

Digestion Experiments with Texas Hays and Fodders. By G. S. Fraps. (Bulletin 147, pp. 3-28.)

Experiments with sheep to test the digestibility of a number of Texas hays and fodders and analyses of the same feeds are reported. A compilation of analyses of hays and fodders by various experiment stations and by this department is also given.

UTAH STATION, Logan, E. D. Ball, Director.

Measurement and Distribution of Irrigation Water. By L. M. Winsor. (Circular 6, pp. 19-38, figs. 4.)

The installation of weirs, particularly the Cippoletti trapezoidal weir, is described, with directions for measuring the flow of irrigation water.

WISCONSIN STATION, Madison, H. L. Russell, Director.

Crop Rotation for Northern Wisconsin. By E. J. Delwiche. (Bulletin 222, pp. 19, figs. 15.)

Different three, four, and five year crop rotations for northern Wisconsin, with methods of arranging fields in a rotation, are described.

Commercial Varieties of Potatoes for Wisconsin. By J. G. Milward. (Bulletin 225, pp. 22, pls. 3, figs. 4.)

The more important standard commercial varieties of potatoes for Wisconsin conditions are described and illustrated, with directions for the growing and improvement of the crop and the production of pure seed as a community enterprise. A copy of a potato score card and rules for exhibitions are also given.

The Wisconsin Dairy Cow Competition. By F. W. Woll and R. T. Harris. (Bulletin 226, pp. 36, figs. 16.)

The records of butter fat production and feed consumption of the best and of the poorest grade and pure-bred cows and herds competing in the

official dairy cow contest conducted by the Wisconsin station during 1910-11, are discussed in their practical relation to herd improvement and the dairy business of the State. A list of names of winners of prizes, together with prizes offered, is added.

The Diagnosis of Contagious Abortion in Cattle by Means of the Complement Fixation Test. By F. B. Hadley and B. A. Beach. (Research Bulletin 24, pp. 217-248, pls. 4, figs. 2.)

The etiology, clinical features, treatment, and methods of diagnosing contagious abortion in cattle are briefly outlined and detailed directions are given for carrying out the complement fixation test, together with the results of tests of the accuracy of the method on different herds of the State.

Importance of Alfalfa as a Wisconsin Forage Plant. By R. A. Moore. (Circular of Information 35, pp. 16, figs. 8.)

The yield and feeding value of alfalfa is compared to that of other crops and methods of growing and harvesting alfalfa, as based on experiments at the Wisconsin station, are described.

Potato Diseases in Wisconsin and Their Control. By L. R. Jones. (Circular of Information 36, pp. 10.)

The more important diseases and insects of the potato in Wisconsin are briefly described. Brief directions for disinfecting the seed potatoes and for preparing and applying sprays are also given.

Wisconsin Bankers' Agricultural Contests. By R. A. Moore and K. L. Hatch. (Circular of Information 38, pp. 9, figs. 3.)

This circular deals with grain contests, having for their purpose a wider dissemination of pure-bred high-yielding Wisconsin grains and the improvement in general agricultural practices.



Issued September 27, 1912.

United States Department of Agriculture,

OFFICE OF EXPERIMENT STATIONS.

A. C. TRUE, Director.

LIST OF STATION PUBLICATIONS RECEIVED BY THE OFFICE OF EXPERIMENT STATIONS DURING AUGUST, 1912.

NOTE.—The station publications noted in this list are not distributed by the Department of Agriculture, but can usually be obtained, as far as the supply will permit, by applying to the stations issuing them.

HAWAII FEDERAL STATION, Honolulu, E. V. Wilcox, Special Agent in Charge.

Sisal and the Utilization of Sisal Waste. By E. V. Wilcox and W. McGeorge. (Press Bulletin 35, pp. 24.)

Analyses of the sisal plant and its waste to determine the possible use of the residue as fertilizer, stock food, or for the manufacture of industrial alcohol are reported and discussed.

Production and Inspection of Milk. By E. V. Wilcox. (Spec. Pub., 1912, July 31, pp. XI+348.)

Detailed information is given on this subject under the following chapter headings: Normal milk, abnormal milk, hygiene and diseases of cows, feeding cows, buildings on premises, milking and handling milk on the farm, transportation and sale of milk, refrigeration, pasteurization and sterilization of milk, preservatives in market milk, physical and chemical examination of milk, bacteriology of milk, transmission of infectious diseases of milk, milk products in their relation to health, and history of milk inspection. A chapter on dietetics of milk with reference to infant feeding, by Louise Tayler-Jones, is also given. A bibliography of milk inspection is added.

IOWA STATION, Ames, C. F. Curtiss, Director.

Farm Poultry Houses. By J. B. Davidson and W. A. Lippincott. (Bulletin 132, pp. 227-251, figs. 15.)

The essentials of a good poultry house for Iowa conditions are outlined, and working plans of types of houses that embody these essentials are described and illustrated, including the colony house used at the Iowa station and a vitrified brick house.

Growing Winter Wheat in Iowa. By L. C. Burnett. (Bulletin 133, pp. 257-273, figs. 9.)

Data for yield and value of winter wheat as compared with other cereals and spring wheat, and tests of varieties of winter wheat under Iowa conditions are reported, with cultural directions for growing the crop.

Bacterial Activities in Frozen Soils. By P. E. Brown and R. E. Smith. (Research Bulletin 4, pp. 157-184.)

Studies of the effect of freezing on the total number of organisms in the soil and on the ammonifying, nitrifying, denitrifying, and nitrogen-fixing powers of the soil are reported.

Bacteriological Studies of Field Soils. I. The Effects of Lime. By P. E. Brown. (Research Bulletin 5, pp. 189-210.)

This is a continuation of Research Bulletin 2 and reports studies of the effect of ground limestone on the total number of bacteria and on the activity of ammonifying, nitrifying, denitrifying, and nitrogen-fixing bacteria of typical Iowa soils under field conditions and correlated with crop yield.

KANSAS STATION, Manhattan, E. H. Webster, Director.

Vaccination Against Hog Cholera. By F. S. Schoenleber. (Bulletin 182, pp. 439-464.)

The results of hog cholera vaccination work in Kansas in 1911 are reported with instructions for carrying out the different methods for vaccinating, ordering the serum, and diagnosing the disease.

KENTUCKY STATION, Lexington, —————, Director.

Analyses of Commercial Fertilizers. By M. A. Scovell and H. E. Curtis. (Bulletin 158, pp. 197-328.)

Analyses of samples of fertilizers for 1911 are reported and briefly discussed.

Notices of Adulteration or Misbranding Under Section 10 of the Kentucky Food and Drugs Act, Approved March 13, 1908. (Notices of Adulteration or Misbranding, Vol. 1, Cases No. 5118-5249, pp. 49-144.)

This is a report for 1911 of inspection and analyses and the prosecution of cases of adulteration or misbranding of bakers' materials, bleached flour, drugs, proprietary medicines, milk, cream, and meat.

MICHIGAN STATION, East Lansing, R. S. Shaw, Director.

Top-working Apple Trees. By C. P. Halligan. (Circular 14, pp. 92-94, figs. 3.)

Brief directions for top-working with the cleft graft and for preparing grafting wax are given.

Potato Culture. By H. J. Eustace. (Circular 15, pp. 4, fig. 1.)

The culture, fertilizing, and spraying of potatoes are briefly discussed.

The Michigan Woodlot. By J. F. Baker. (Circular 17, pp. 109-122, figs. 6.)

The condition of Michigan woodlots and methods of invoicing timber stands are briefly outlined, and suggestions are given as to the protection, cutting, propagation, and location of farm woodlots, and the adaptation of different trees to soils.

Cover Crops for Michigan Orchards and Vineyards. By H. J. Eustace. (Circular 18, pp. 123-134, figs. 10.)

The benefits from cover crops in orchards and vineyards and the value of different crops for such purposes are briefly discussed.

NEW JERSEY STATIONS, New Brunswick, J. G. Lipman, Director.
Concentrated Feeding Stuffs. By C. S. Cathcart et al. (Bulletin 243, pp. 3-62.)

The results of inspection and analyses of feeding stuffs on sale in the State during 1911 are reported with explanations. Data showing the relation between composition and selling price of feeds are included.

Essentials in Profitable Egg Production. By H. R. Lewis. (Bulletin 244, pp. 3-36, pls. 10.)

The handling, housing, and feeding of fowls in the successful production of market eggs under New Jersey conditions are discussed in detail. The bulletin is based largely on work at the New Jersey station.

NEW YORK CORNELL STATION, Ithaca. L. H. Bailey. Director.

Frosts in New York. By W. M. Wilson. (Bulletin 316, pp. 505-543, figs. 18.)

Conditions which affect frosts and methods of forecasting frosts and frost protection are discussed with particular reference to New York conditions. Records of frosts by counties in the State are given.

The Chemical Analysis of Soil. By E. O. Fippin. (Circular 12, pp. 4.)

The value of chemical analyses of a soil is briefly stated in explanation of the station's policy of not analyzing miscellaneous samples. Brief suggestions for soil improvement are added.

NEW YORK STATE STATION, Geneva. W. H. Jordan, Director.

Potato Spraying Experiments, 1902-1911. By F. C. Stewart, G. T. French, and F. A. Sirrine. (Bulletin 349, pp. 99-139.)

"This bulletin gives a detailed account of the potato spraying experiments conducted by the station in 1911 and a summary of results obtained in similar experiments made during the 9 years preceding."

A Study of the Metabolism and Physiological Effects of Certain Phosphorus Compounds with Milch Cows, II. By A. R. Rose. (Technical Bulletin 20, pp. 3-32, figs. 4.)

This is a continuation of Technical Bulletin 1 of the station and reports studies of the effect of lowering the phosphorus content of rations, using washed wheat bran and calcium phytate as variables, on the metabolism, milk production, and physiological condition of milch cows.

Phytin and Pyrophosphoric Acid Esters of Inosite, II. By R. J. Anderson. (Technical Bulletin 21, pp. 3-16.)

This bulletin, which is the second on the same subject, describes several new salts of phytic acid and reports results of "efforts to synthesize phytic acid by acting on dry inosite with dry pyrophosphoric acid."

NORTH DAKOTA STATION, Agricultural College; J. H. Worst, Director.

Special Bulletin Food Department. (Special Food Bulletin, 2 (1912), No. 6, pp. 97-112.)

The results of analyses of medicines of a so-called Farmers General Service Company, bitters, face lotions, and other proprietary medicines, linseed oil, a so-called quack-grass destroyer, and a number of foods and beverages are reported.

Report of Food Commissioner, 1911. By L. A. Congdon. (Annual Report, 1911, pt. 2, pp. 215.)

This contains a detailed report by the State Food Commissioner for 1911, giving the results of an examination of foods, drugs, paints, dairy products, beverages, vinegars, rice, flour, oils, Paris green, patent medicines, and a large number of proprietary compounds.

OHIO STATION, Wooster, C. E. Thorne, Director.

Fall Manual of Practice in Economic Zoology. By H. A. Gossard. (Bulletin 233, pp. 53-164+VII, figs. 13.)

This is a compilation of information on the habits and injuries of the more important fall insects of different field crops, orchard trees, fruits, and vegetables, with directions for their control.

Tobacco: Breeding Cigar Filler in Ohio. By A. D. Selby and T. Houser. (Bulletin 239, pp. 361-479, figs. 30.)

This is a companion to Bulletin 238 of the station, and reports in detail the results of nine years' experimental work in the breeding of better types of cigar filler tobacco by selection and hybridization. The possibilities of growing crops of first generation tobacco hybrids are outlined, together with results of cooperative tests of such hybrids by farmers.

OREGON STATION, Corvallis, J. Withycombe, Director.

The Soils of Oregon. By C. E. Bradley. (Bulletin 112, pp. 48.)

Part 1 of this bulletin reports and discusses the results of chemical analyses of a number of typical soils from different parts of the State. Part 2 reports analyses of drainage water from the soils under different cropping systems and fertilizers and of the waters of the Willamette and the Columbia Rivers.

Orchard Irrigation Studies in the Rogue River Valley. By C. I. Lewis, E. J. Kraus, and R. W. Rees. (Bulletin 113, pp. 47, figs. 11.)

The results of five seasons' cooperative experiments on different soil types and orchards of the region to determine the best date, amounts, and ways of applying water to orchards, and its effect on soil temperature, color, form, size, and maturity of fruit and foliage are reported and discussed in detail.

The Pollination Question. (Circular 20, pp. 7.)

The more important facts regarding pollination in apples and pears and the practical application of them are briefly discussed, as based on investigations by the Oregon station.

SOUTH DAKOTA STATION, Brookings, J. W. Wilson, Director.

Fattening Pigs. By J. W. Wilson. (Bulletin 136, pp. 339-350, fig. 1.)

Feeding experiments with pigs, to determine the comparative value of buttermilk, sweet skimmed milk, and sour milk when fed with corn, and the practical value of the so-called "hog motor" for grinding corn for fattening hogs are reported.

Corn Silage and Roots for Steers. By J. W. Wilson. (Bulletin 137, pp. 354-367, figs. 11.)

Feeding experiments with steers to determine the value of (1) corn silage when fed alone and with hay, grain, and oil meal, (2) fodder silage, (3) millet hay, (4) corn fodder, and (5) sugar beets, mangel-wurzel, and stock beets, fed separately with hay and grain as compared with a ration of hay, grain, and oil meal are reported.

Hog Cholera. By E. L. Moore and T. B. Kelly. (Bulletin 138, pp. 370-391, figs. 5.)

The symptoms and post-mortem appearance of hog cholera are described, and tests of potent serum by the agglutination of *Bacillus cholera suis*, and of the value of salt solution in hyperimmunization are reported, with brief directions for vaccinating hogs.

TEXAS STATION, College Station, B. Youngblood, Director.

Report on Experiments with Citrus Fruits at the Beeville Substation.

By A. T. Potts. (Bulletin 148, pp. 5-22, figs. 11.)

Tests of hardiness of varieties of citrus fruits under the conditions prevailing in this part of Texas are reported, with brief directions as to methods of cultivation and frost protection.

WISCONSIN STATION, Madison, H. L. Russell, Director.

Directions for Vaccinating against Hog Cholera. By F. B. Hadley. (Circular of Information 39, pp. 11, figs. 6.)

The symptoms of hog cholera are briefly described, and directions for vaccinating hogs and for obtaining the serum are given.



United States Department of Agriculture,

OFFICE OF EXPERIMENT STATIONS.

A. C. TRUE, Director.

LIST OF STATION PUBLICATIONS RECEIVED BY THE OFFICE OF EXPERIMENT STATIONS DURING SEPTEMBER, 1912.

NOTE.—The station publications noted in this list are not distributed by the Department of Agriculture, but can usually be obtained, as far as the supply will permit, by applying to the stations issuing them.

ALABAMA COLLEGE STATION, Auburn, J. F. Duggar, Director.

The Cotton Worm or Caterpillar. By W. E. Hinds. (Bulletin 164, pp. 139-160, figs. 13.)

This bulletin describes the life history of the cotton worm (*Alabama argillacea*), discusses the comparative value of Paris green and arsenate of lead, and gives directions as to methods and time of application of these poisons for its control as based on experiments at the Alabama station. Brief suggestions for the use of trap lights, and notes on the prevalence of cotton worms in 1912 are also given.

Southern Bur Clover. By E. F. Cauthen. (Bulletin 165, pp. 163-176, figs. 7.)

The characteristics, distribution, and uses of bur clover (*Medicago maculata*) are briefly described, and information is given as to the composition of the hay and methods of inoculating, seeding, and harvesting the crop under Alabama conditions.

ALABAMA TUSKEGEE STATION, Tuskegee Institute, G. W. Carver, Director.

Poultry Raising in Macon County, Alabama. By G. W. Carver. (Bulletin 23, pp. 3-20, figs. 4.)

A study of the present condition and possibilities of the poultry industry in the county is reported. Suggestions as to methods of housing, hatching, and raising poultry, with more detailed information as to different feeding rations for layers and for breeders under Alabama conditions are given.

COLORADO STATION, Fort Collins, C. P. Gillette, Director.

Deterioration in the Quality of Sugar Beets Due to Nitrates Formed in the Soil. By W. P. Headden. (Bulletin 183, pp. 3-184, figs. 7.)

The effects of alkali, seepage, fertilizer, leaf spot, and climatic conditions as possible but not exclusive factors on the composition of the sugar beet, as brought out in experiments at the Colorado station and elsewhere, are discussed, and several seasons' studies of the effect of excessive amounts of

nitrates, both as fixed by bacteria in certain Colorado soils and when applied alone and in conjunction with other fertilizers, on the composition and quality of the sugar beet, are reported in detail.

The Ammonifying Efficiency of Certain Colorado Soils. By W. G. Sackett. **Algae in some Colorado Soils.** By W. W. Robbins. (Bulletin 184, pp. 3-36, pls. 4, figs. 3.)

Part 1 of this bulletin reports tests of ammonification of different organic substances in a number of samples of characteristic niter soils and normal soils of Colorado. A comparison of the results with those obtained by other investigators on soils from other localities is also given. Part 2 reports a study of species, including descriptions and illustrations of algae present in different types of Colorado soils, with a view of determining their symbiotic relation to nitrogen-fixing bacteria.

GEORGIA STATION, Experiment, M. V. Calvin, Director.

Mendelian Inheritance in Cotton Hybrids. By C. A. McLendon. (Bulletin 99, pp. 141-228, pl. 1, figs. 27.)

Experimental methods in the crossing of different varieties of cotton are described in detail, and preliminary studies of the inheritance of a number of characters in the F_1 and F_2 generations of crosses are reported. A bibliography is added.

HAWAII FEDERAL STATION, Honolulu, E. V. Wilcox, Special Agent in Charge.

The Effect of Manganese on Pineapple Plants, and the Ripening of the Pineapple Fruit. By E. V. Wilcox and W. P. Kelley. (Bulletin 28, pp. 20, pls. 2.)

This is an account of a continuation of work previously reported upon in Bulletin 26 and other publications of the station, and reports studies of the anatomical features, physiology, and composition of the pineapple plant and the ripening process of the fruit as affected by manganese content of the soil.

The Pineapple in Hawaii. By J. E. Higgins. (Press Bulletin 36, pp. 34, figs. 15.)

Practical information is given as to the more important aspects and methods of production, fertilization, marketing, and control of diseases of the pineapple in Hawaii as based on experiments at this station.

***Euphorbia lorifolia*, a Possible Source of Rubber and Chicle.** By W. McGeorge and W. A. Anderson. (Press Bulletin 37, pp. 16.)

Part 1 of this bulletin reports studies of the physical and chemical properties and methods of coagulation of latex from *E. lorifolia* to determine the commercial value of its constituents. Part 2 reports observations on the extent and commercial importance of the Euphorbia forest in Hawaii, the characteristics of the trees, and their adaptability for tapping.

IDAHO STATION, Moscow, W. L. Carlyle, Director.

Hog Raising for the Idaho Farmer. By W. L. Carlyle and E. J. Iddings. (Bulletin 74, pp. 3-31, figs. 9.)

Feeding experiments to test (1) the value of tankage as a supplementary feed to wheat, corn, and shorts; (2) the comparative values of corn, peas, soy-bean meal, and tankage as supplementary feed to shorts and barley; and (3) tankage and soy-bean meal as a supplement to rolled wheat are reported with practical suggestions as to the selection, housing, management, and feeding of hogs under Idaho conditions.

INDIANA STATION, Lafayette, A. Goss, Director.

Winter Steer Feeding, 1909–10 and 1910–11. By J. H. Skinner et al.
 (Bulletin 153, popular edition, pp. 3–24.)

This is a popular edition of this bulletin.

KENTUCKY STATION, Lexington, A. M. Peter, Acting Director.

The Soils of Webster County, Ky. By S. C. Jones and A. M. Peter.
 (Bulletin 162, pp. 135–169, pl. 1.)

This bulletin, which was prepared in cooperation with the Kentucky Geological Survey, reports a survey, with map, of the soil types of the county, including mechanical and chemical analyses of typical samples. Pot experiments with a soil similar to the upland type of the county to test the action of different fertilizers for different crops are also reported.

MASSACHUSETTS STATION, Amherst, W. P. Brooks, Director.

The Microscopic Identification of Cattle Foods. By G. H. Chapman.
 (Bulletin 141, pp. 3–71, figs. 52.)

The characteristics and methods of identification of grain and grain products, legumes and oil seeds, weed seeds and miscellaneous products, condiments, chemicals, and miscellaneous substances in the microscopical examination of feeding stuffs are described. An analytical key to some commonly occurring starches is also given.

Meteorological Observations. By J. E. Ostrander and H. W. Angier.
 (Meteorological Bulletin 283, pp. 4.)

This is a summary for July, 1912.

Meteorological Observations. By J. E. Ostrander and H. W. Angier. (Meteorological Bulletin 284, pp. 4.)

This is a summary for August, 1912.

MINNESOTA STATION, University Farm, St. Paul, A. F. Woods, Director.

Seed Laboratory Report for 1910 and 1911. By W. L. Oswald and E. M. Freeman. (Bulletin 127, pp. 129–163, pls. 3, figs. 13.)

Methods of laboratory seed testing in use at the Minnesota station are described and the results of two years' purity and germination tests of seeds are reported. A weed-seed case for the identification of weed seeds, containing directions, which are here reprinted, for home seed testing, is also described and illustrated.

The Relation of Different Systems of Crop Rotation to Humus and Associated Plant Food. By G. W. Walker. (Bulletin 128, pp. 165–186.)

Previous investigations on the physical and chemical properties of humus and methods of determining humus are reviewed, and studies of the changes produced in humus and of the proportion of total and humus nitrogen, phosphoric acid, and potash of soil plats under known systems of cropping and fertilizing are reported.

MISSISSIPPI STATION, Agricultural College, E. R. Lloyd, Director.

Report of Work at McNeill Branch Experiment Station for Years 1907 to 1911, Inclusive. By E. B. Ferris. (Bulletin 158, pp. 3–31.)

This is a review of the work of this station in its different departments from 1907 to 1911, inclusive.

Clearing Pine Lands. By E. B. Ferris. (Bulletin 159, pp. 12, figs. 4.)

Various methods and cost of clearing cut-over pine lands of stumps as based on trials by the Mississippi station are reported.

The Cut-over Lands of South Mississippi. By E. B. Ferris. (Bulletin 160, pp. 27, figs. 2.)

The agricultural possibilities of the pine lands of Mississippi are pointed out, and practical information is given as to methods of fertilizing and crop adaptation of the soils of this region as based on work of the McNeill Branch Experiment Station.

Some Scale Insects of Mississippi with Notes on Certain Species from Texas. By G. W. Herrick. (Technical Bulletin 2, pp. 3-78, figs. 36.)

A number of species of Coccidæ collected in Mississippi and Texas are described and illustrated. The technic of preparing the insects for study is described. Citations to the literature on Coccidæ are also given.

Tuberculosis in Dairy Cattle. By E. M. Ranck. (Circular, 1912, August, pp. 5-35, figs. 13.)

This is a reprint of the Report of the International Commission on the Control of Bovine Tuberculosis, with brief suggestions for the production of sanitary milk under Mississippi conditions.

Twenty-second Annual Report, 1909. By W. L. Hutchinson. (Annual Report, 1909, pp. 14.)

This contains a financial statement and a brief administrative report by the director.

Twenty-third Annual Report, 1910. By W. L. Hutchinson. (Annual Report, 1910, pp. 12.)

This contains a brief administrative report by the director, and a financial statement.

MISSOURI COLLEGE STATION, Columbia, F. B. Mumford, Director.

Cooperative Experiments with Alfalfa. By M. F. Miller and C. B. Hutchinson. (Bulletin 106, pp. 21-56, figs. 7.)

Cooperative experiments on the more important soil groups in different parts of the State to test the efficiency of barnyard manure, lime, steamed bone meal, inoculation, and cultivation in the growing of alfalfa under Missouri conditions are reported.

Some Factors in Wheat Production. By M. F. Miller and J. C. Hackleman. (Circular 56, pp. 167-177, figs. 5.)

Information is given as to varieties, methods of seeding, fertilizing, seed cleaning, and control of insects and diseases of wheat under Missouri conditions.

NEW YORK STATE STATION, Geneva, W. H. Jordan, Director.

An Experiment in Breeding Apples. By U. P. Hedrick and R. Wellington. (Bulletin 350, pp. 141-186, pls. 17.)

Experiments in the crossing of a large number of varieties of apples at the Geneva station are reported, with a discussion of the inheritance of the different characters in the crosses.

OHIO STATION, Wooster, C. E. Thorne, Director.

County Experiment Farms in Ohio: Their Organization and Work in 1911. By C. E. Thorne, C. G. Williams, and C. McIntire. (Bulletin 241, pp. 513-549, figs. 3.)

The text of the Ohio law for the establishment of county experiment farms is given and explained, and the organization and lines of work of such farms in different counties of the State are described, together with statistics of production for the counties and crop and fertilizer tests conducted on the farms since 1909.

PENNSYLVANIA STATION, State College, A. Agee, Acting Director.

Annual Report, 1911. (Annual Report, 1911, pp. 642, pls. 58.)

This contains a financial statement, a review of the year's work by the director, and detailed reports and special papers on different phases of the work of the station in the departments of agronomy, animal husbandry, dairy husbandry, experimental and agricultural chemistry, experimental horticulture, horticulture, and the Institute of Animal Nutrition. Meteorological records for 1910 are appended.

PORTO RICO FEDERAL STATION, Mayaguez, D. W. May, Special Agent in Charge.

Annual Report, 1911. (Annual Report, 1911, pp. 44, pls. 4.)

This contains a summary of investigations at the station by the special agent in charge and a review of the year's work for the departments of the station by the chemist, horticulturist, assistant horticulturist, entomologist, pathologist, and animal husbandman.

UTAH STATION, Logan, E. D. Ball, Director.

The Movement of Water in Irrigated Soils. By J. A. Widtsoe and W. W. McLaughlin. (Bulletin 115, pp. 195-268, figs. 8.)

This is a detailed report of irrigation investigations conducted in large part during 1902 and 1903 at the Utah station in cooperation with this department and includes studies of the water-holding power of soils, movement and distribution of irrigation water, and rate of loss of water under field conditions.

WASHINGTON STATION, Pullman, R. W. Thatcher, Director.

The Cost and Methods of Clearing Land in Western Washington. By H. Thompson. (Bulletin 8, Special Series, pp. 3-34, figs. 8.)

This bulletin, which was prepared in cooperation with the Bureau of Plant Industry of this department, gives directions as to methods and cost of blasting, pulling, and burning stumps in clearing land as adapted to this section.

Silos and Silage. By R. C. Ashby. (Popular Bulletin 46, pp. 4.)

Brief notes on types of silos and the advantages and cost of silage under Washington conditions are given.

How to Make Bread from Soft Wheat Flours. By G. A. Olson. (Popular Bulletin 47, pp. 4, fig. 1.)

Brief directions for making bread from Washington flours are given.

WYOMING STATION, Laramie, H. G. Knight, Director.

A Comparison of Sheep Branding Paints. By C. J. Oviatt. (Bulletin 93, pp. 8, figs. 6.)

Comparative tests of the efficiency, durability, and scouring-out qualities of different paints for sheep-branding purposes are reported.

The Chemical Examination of Death Camas. By F. W. Heyl et al. (Bulletin 94, pp. 3-31, figs. 3.)

Previous investigations by others on the poisonous character of *Zygadenus* are reviewed and studies of the plant characteristics, chemical composition, methods of preparation, and percentage of alkaloid of *Zygadenus intermedium*, together with tests of the physiological effect of the alkaloid on guinea pigs, frogs, and dogs, are reported. Tests of the toxicity of resin of the plants are also reported.



Issued November 23, 1912.

United States Department of Agriculture,

OFFICE OF EXPERIMENT STATIONS.

A. C. TRUE, Director.

LIST OF STATION PUBLICATIONS RECEIVED BY THE OFFICE OF EXPERIMENT STATIONS DURING OCTOBER, 1912.

NOTE.—The station publications noted in this list are not distributed by the Department of Agriculture, but can usually be obtained, as far as the supply will permit, by applying to the stations issuing them.

ALABAMA COLLEGE STATION, Auburn, J. F. Duggar, Director.

The Boll Weevil Advance in Alabama. Fighting the Boll Weevil. Destroying Boll Weevils by Clean Farming. By W. E. Hinds. (Circulars 5, 6, 7, rev., pp. 9-24, figs. 2.)

This is a revised edition of these circulars.

A Field Method for Distinguishing Certain Orange Stock. By F. A. Wolf. (Circular 17, pp. 87-96, pls. 3, figs. 6.)

Methods of identifying different species of citrus trees by means of their differences as to odor, and root and anatomical characteristics are briefly described.

ARKANSAS STATION, Fayetteville, C. F. Adams, Director.

The Infectiousness of Serum and Serum-free Blood Corpuscles in Hog Cholera. By R. R. Dinwiddie. (Bulletin 111, pp. 461-479.)

Inoculation experiments with pigs to determine whether the virus of hog cholera, as it exists in the blood, occurs in the serum or plasma, and in the corpuscles of the blood are reported. The experimental methods in the separation of the serum and the corpuscles are described.

Cotton Grading. By M. Nelson. (Circular 15, pp. 4.)

Standard grades of cotton as fixed by an act of the Federal Congress and their market value are briefly described, with directions for the taking of samples to be graded by the station in accordance with a plan adopted by the farmers of the State to obtain equitable selling of the product.

Practical Facts about Angora Goats. By W. C. Thompson. (Circular 16, pp. 4.)

The value of mohair and mutton, and methods of management of the Angora goat are briefly described in answer to requests for information on the subject.

CALIFORNIA STATION, Berkeley, T. F. Hunt, Director.

Hog Cholera and Preventive Serum. By F. M. Hayes. (Bulletin 229, pp. 22, figs. 10.)

The cause, symptoms, and post-mortem appearances of hog cholera, and methods of inoculating with hyperimmune serum for the prevention of the disease are discussed. Methods of preparation and distribution of the serum and the results of serum treatment in infected herds of the State are also described.

CONNECTICUT STORRS STATION, Storrs, L. A. Clinton, Director.

Spraying Cucumbers and Melons. By C. D. Jarvis. (Bulletin 72, pp. 85-123, figs. 13.)

The results of nine years' experimental work to test the value of various spraying materials for the control of insects and diseases of muskmelons and cucumbers and methods of applying Bordeaux mixture under Connecticut conditions are reported. Practical suggestions for the production of these crops as based on the experiments and observations by the station and the experiences of practical growers are added.

Records of a Dairy Herd for Five Years. By J. M. Trueman. (Bulletin 73, pp. 127-148, figs. 4.)

Records of feed consumption and of milk and butter fat production during 1906 to 1911 by the dairy herd of the station farm are reported. The cost of milk production and net profits are discussed.

DELAWARE STATION, Newark, H. Hayward, Director.

Soy Beans. By A. E. Grantham. (Bulletin 96, pp. 39, figs. 6.)

Means of utilizing the soy bean are briefly discussed, and methods of growing, harvesting, fertilizing, and thrashing the crop under Delaware conditions as based on experiments at the station are described. Variety tests and chemical analyses of the plant are included.

Plant Protection. By C. A. McCue. (Bulletin 97, pp. 78, figs. 10.)

This is a compilation of information as regards the preparation and the application of the more important insecticides and fungicides for the control of diseases and insects of orchard and garden crops under Delaware conditions. The use of spraying machinery, the cultural control of plant diseases, and methods of protecting trees from rodents are also described.

IDaho STATION, Moscow, W. L. Carlyle, Director.

A Study of Idaho Butter with Suggestions for Improvement. By G. E. Frevert. (Bulletin 73, pp. 52, figs. 11.)

This bulletin discusses the more important factors in the production of high-grade butter, and reports a comparative study of the composition and quality of ranch and creamery butter in Idaho and tests of the shrinkage of butter in prints.

ILLINOIS STATION, Urbana, E. Davenport, Director.

Fertilizer Experiments with Muskmelons. By J. W. Lloyd. (Bulletin 155, pp. 23-64, figs. 7.)

The results of five seasons' plot experiments in two counties of the State to determine the comparative value of various fertilizer materials and mixtures in conjunction with, and as a substitute for, manure, and methods of application of manure in the production of muskmelons under Illinois conditions are reported and discussed.

Insects Injurious to Stored Grains and Their Ground Products. By A. A. Girault. (Bulletin 156, pp. 66-92, figs. 14.)

The life history, habits, distribution, and injuries of a number of granary moths, beetles, and weevils are described with methods of control. A key for the identification of granary insects is also given.

Peaty Swamp Lands; Sand and Alkali Soils. By C. G. Hopkins, J. E. Readhimer, and O. S. Fisher. (Bulletin 157, pp. 94-131, figs. 6.)

The results of a series of tests of fertilizer materials and mixtures on different farms situated in the peat-swamp lands and similar but less extensive

tests on the sand-ridge soil of Illinois are reported and discussed. Methods of correcting the alkali of some central and northern Illinois soils are also briefly discussed.

Relative Economy, Composition, and Nutritive Value of the Various Cuts of Beef. By L. D. Hall and A. D. Emmett. (Bulletin 158, pp. 134-233, figs. 69.)

Studies of (1) the relative proportions of lean, visible fat, and bone in each of the retail and wholesale cuts of beef; (2) the chemical composition and nutritive value of the boneless meat of the various wholesale cuts; and (3) the net cost of the lean, the gross meat, and the food nutrient in each cut at current market prices are reported. Data as to the amounts and proportions of the various internal organs and other slaughter by-products are also included. The various retail cuts of meat are illustrated.

Balanced Versus Unbalanced Rations for Dairy Cows. By W. J. Fraser and C. C. Hayden. (Bulletin 159, pp. 236-246, figs. 2.)

Tests of the effect of a well-balanced ration composed of corn silage, clover hay, gluten feed, and ground corn as compared with an unbalanced ration of corn silage, timothy hay, clover hay, and ground corn on the production of milk and butter fat of cows are reported.

Official Records of Pure-bred Dairy Cows. By C. C. Hayden. (Bulletin 160, pp. 248-276, figs. 7.)

This bulletin discusses the improvement of dairy cattle by selection and breeding in its bearing on the present status of the dairy industry of Illinois, describes methods of conducting semiofficial and official tests and the requirements of different associations for admission to the advanced registry, and gives the semiofficial and official records of pure-bred cows of different breeds in the State. A copy of a constitution adopted by some breed associations is also given.

Tests of Lime Sulphur, Bordeaux Mixture, and Other Sprays. By O. S. Watkins. (Circular 159, pp. 34, figs. 8.)

Spraying experiments during 1910 and 1911 to determine (1) the relative efficiency of lime-sulphur mixtures and Bordeaux mixture, (2) the comparative value of different commercial brands of arsenate of lead, and (3) the value of certain new fungicides and insecticides under Illinois conditions are reported.

Some Common Spray Mixtures. By O. S. Watkins. (Circular 160, pp. 19, figs. 2.)

Directions are given as to methods of preparing and applying the more important fungicides and insecticides in the spraying of fruit trees under Illinois conditions.

Growing and Marketing Wool. By W. C. Coffey. (Circular 161, pp. 16, figs. 8.)

Suggestions are given as to the breeding and management of sheep, and shearing, tying, packing, and storing the fleece for the production of a high quality of market wool.

Care of Milk in the Home. By B. R. Rickards and H. N. Parker. (Circular 162, pp. 6.)

The importance of having clean milk is emphasized, and brief directions for keeping milk clean in the home and for home pasteurizing are given.

Economic Factors in Cattle Feeding. I, Relation of the United States to the World's Beef Supply. By H. W. Mumford and L. D. Hall. (Circular 163, pp. 11, figs. 5.)

Comparative statistics of beef production and consumption per capita and per area, and of exports of cattle and beef for the principal beef-producing countries of the world are reported and discussed as to their bearing on the present status of the beef-cattle industry of the United States.

The Chinch-bug Situation in Illinois. By S. A. Forbes. (Circular, 1912, May 3, pp. 7.)

The status of the chinch-bug outbreak is pointed out, and methods of destroying the new generation of bugs are described, together with plans of organization for a community campaign for the destruction of the pest.

Hardin County Soils. By C. G. Hopkins et al. (Soil Report 3, pp. 33, pl. 1, figs. 4.)

This is a report of a soil survey, including map, of Hardin County, giving a description of the soil types, estimates from chemical analyses of plant-food contents per acre, and the results of fertilizer tests. An appendix describes the methods of conducting a soil survey, and crop and fertilizer rotations for permanent soil improvement more fully discussed in Bulletin 123 of the station.

IOWA STATION, Ames, C. F. Curtiss, Director.

Bacteria and Ice Cream. By B. W. Hammer. (Bulletin 134, pp. 278-301, figs. 2.)

Previous work by others is briefly reviewed, and studies of the numbers and sources of bacteria in ice cream, possibilities of manufacturing ice cream with low bacterial count, and the bacterial changes in ice cream during storage are reported, with a view of determining the practicability of the adoption of bacterial standards for commercial ice cream.

Bacteriological Studies of Field Soils. II, The Effects of Continuous Cropping and Various Rotations. By P. E. Brown. (Research Bulletin 6, pp. 213-246.)

This is a continuation of Research Bulletins 2 and 5, and reports a study of the effect of continuous cropping as compared with different crop rotations on the total amount of bacteria and on the ammonifying, nitrifying, and nitrogen-fixing powers of soils. The relation of crop yields to the bacterial activities is also briefly discussed.

KANSAS STATION, Manhattan, E. H. Webster, Director.

The Sorghum Crop in Kansas. By A. H. Leidigh. (Circular 25, pp. 4.)

The adaptation of the sorghums to the State and cultural methods are briefly described.

Navel Ill. By F. S. Schoenleber. (Circular 26, pp. 3.)

The cause, symptoms, post-mortem appearances, and methods of prevention and treatment of the disease are briefly described.

Capons for Kansas. By W. A. Lippincott. (Circular 27, pp. 14, figs. 11.)

Directions are given with illustrations for caponizing chickens, and the effect of the operation on the amount and quality of the meat and characteristics of the capon is briefly discussed with a view of stimulating an interest in the commercial production of capons.

MAINE STATION, Orono, C. D. Woods, Director.

Aphid Pests of Maine. Food Plant Catalogue of the Aphididae of the World. I. Notes on Psyllidae. By Edith M. Patch. (Bulletin 202, pp. 157-234, pls. 10, figs. 29.)

The bulletin gives a descriptive account of aphids infesting conifers and certain other plants in Maine, and a list of aphids recorded elsewhere with references to literature. Notes on American Psyllidae are also added.

Official Inspections. (*Official Inspections* 41, pp. 101-116.)

The results of analyses of jams, jellies, preserves, pork sausage, and pure and imitation vanilla extracts are reported and briefly discussed. Notes on the sanitary protection of food products while on sale are added.

Official Inspections. (*Official Inspections* 42, pp. 117-156.)

The chief requirements of the Maine fertilizer law are stated, and analyses of samples of fertilizers on sale in the State during 1912 are reported and discussed.

Official Inspections. (*Official Inspections* 43, pp. 157-164.)

The results of examinations of oysters and clams on sale during 1911-12 are reported and discussed. A list of cases for prosecution is also given.

MASSACHUSETTS STATION, Amherst, W. P. Brooks, Director.

Meteorological Observations at the Massachusetts Agricultural Experiment Station. By J. E. Ostrander and H. W. Angier. (*Meteorological Bulletin* 285, pp. 4.)

This is a summary for September, 1912.

MICHIGAN STATION, East Lansing, R. S. Shaw, Director.

Wheat Improvement. By F. A. Spragg. (*Bulletin* 268, pp. 3-15, figs. 5.)

Tests of yield, hardness, and baking and milling qualities of different varieties of Michigan wheats are reported with suggestions to farmers as to methods of wheat improvement.

Fertilizer Analyses. By A. J. Patten, W. C. Marti, and A. Itano. (*Bulletin* 269, pp. 19-67.)

The text of the Michigan fertilizer law is given, and analyses and valuations of samples of fertilizers inspected by the station during 1911-12 are reported.

MISSOURI COLLEGE STATION, Columbia, F. B. Mumford, Director.

Partial Bibliography and Index of the Publications of the College of Agriculture and the Agricultural Experiment Station. By H. O. Severance. (*Bulletin* 105, pp. 19.)

This bulletin makes available the material published by the Missouri College of Agriculture and the Agricultural Experiment Station, and records serial publications of the college and station.

MONTANA STATION, Bozeman, F. B. Linfield, Director.

Preliminary Report on the Analyses of Montana Waters. By W. M. Cobleigh et al. (*Circular* 7, pp. 17-34, fig. 1; Sup., folio, fig. 1.)

This circular briefly discusses the sanitary qualities and tests of water, and reports a study of the sanitary conditions of the watershed, chemical and bacteriological tests of samples of water of the Yellowstone River between Gardiner and Glendive and mineral analyses of samples of water from a number of cities of the State. The effect of alkaline water on man and on animals is also briefly discussed. A special design of still for the purification of alkali water for household purposes is briefly described in a supplement to the circular.

The Action of Alkali on Hydraulic Cements. By E. Burke and R. M. Pinckney. (*Circular* 8, pp. 35-49, figs. 3.)

This circular is a popular edition of *Bulletin* 81 of the station.

Poultry Houses. By W. F. Schoppe. (*Circular* 9, pp. 15, figs. 6.)

This circular outlines the more important principles underlying the construction of poultry houses and describes a curtain-front house adapted to Montana conditions, with illustrations and bills of material.

Dairying in Montana. By R. W. Clark. (Circular 10, pp. 17-36.)

This circular gives suggestions as to the management, breeding, and feeding of dairy herds under Montana conditions. Data showing the digestible nutrients in the more common feeds of Montana and records of feed consumption and milk and butter-fat production of the station herd are also given.

Navel-ill in New-born Foals. By W. J. Taylor. (Circular 11, pp. 39-41.)

Brief descriptive notes are given as to the nature, symptoms, and treatment of the disease.

A Warning Against Fan Weed. By D. B. Swingle and A. Atkinson. (Circular 12, pp. 43-53, figs. 3.)

The distribution, characteristics, habits, and methods of extermination of the fan weed (*Thlaspi arvense*) are briefly described.

Hog Management. By R. W. Clark and H. P. Griffin. (Circular 13, pp. 55-77, figs. 8.)

The adaptation of the State for hog production is briefly discussed, and methods of housing, feeding, breeding, and management of hogs under Montana conditions are described.

Planting Trees and Shrubs on the Dry Farm. By O. B. Whipple. (Circular 14, pp. 79-94, figs. 2.)

Suggestions are given as to the planning of the homestead with reference to the planting of trees and shrubs under dry-farming conditions in Montana.

Flax Growing in Montana. By F. S. Cooley and M. L. Wilson. (Circular 15, pp. 95-113, figs. 4.)

Suggestions are given as to the methods of seeding, harvesting, thrashing, and treatment of disease of flax under Montana conditions. A method of adjusting drills to sow the desired amount of seed is also described.

The Pear-leaf Blister Mite. By J. R. Parker. (Circular 16, pp. 115-118.)

Brief descriptive notes are given on the injuries, life history, and methods of control of the insect.

A Spraying Program for Montana Orchards. By R. A. Cooley and D. B. Swingle. (Circular 17, pp. 119-153, figs. 12.)

Directions are given as to methods of preparation and date of application of the more important insecticides and fungicides for the control of diseases and insects of the orchard under Montana conditions. The life histories, habits, and injuries of the more important insects are described.

Chick Feeding. By W. F. Schoppe. (Circular 18, pp. 6.)

This circular gives suggestions as to the feed requirements of and methods of feeding chicks and the disinfection of brooders and incubators.

Suggestions to the Dry Farmer. (Circular 19, pp. 52, figs. 27.)

Data as to rainfall and a summarized discussion of the more important facts in the production of crops under dry-farming conditions, as based on the work of the Montana station, are reported. A bibliography is added.

NEW HAMPSHIRE STATION, Durham, J. C. Kendall, Director.

Some Apple Diseases and Their Treatment. By C. Brooks. (Bulletin 157, pp. 32, figs. 31.)

This is a revision of Bulletin 144 of the station, bringing to date the information regarding the more important apple diseases and their control, including the preparation of insecticides and fungicides under New Hampshire conditions as based on the work of the State experiment station.

NEW JERSEY STATION, New Brunswick, J. G. Lipman, Director.

The Elongation of the Hypocotyl: A Preliminary Study. By B. D. Halsted. (Bulletin 245, pp. 3-32, pls. 12, figs. 6.)

Preliminary studies of the length of the hypocotyl of a large number of different species of plants and the influence of hybridization, maturity and size of seed, mutilation of embryo, depth of planting, crowding of seeds, and various environmental and soil factors on the length of the hypocotyl are reported and discussed.

NEW YORK STATE STATION, Geneva, W. H. Jordan, Director.

Ten Years of Potato Spraying. By F. H. Hall. (Bulletin 349, popular edition, pp. 11, fig. 1.)

This is a popular edition of this bulletin.

Some New Apples from Known Parents. By F. H. Hall. (Bulletin 350, popular edition, pp. 12, fig. 1.)

This is a popular edition of this bulletin.

The Organic Phosphoric Acid Compound of Wheat Bran: Preliminary Report. By R. J. Anderson. (Technical Bulletin 22, pp. 16.)

An organic phosphoric acid compound isolated in attempts to obtain phytin from wheat bran and a preliminary study of its properties are reported.

NORTH CAROLINA STATION, West Raleigh, B. W. Kilgore, Director.

Cottonseed Meal and Corn Silage Feeding Experiments with Beef Cattle. By R. S. Curtis. (Bulletin 222, pp. 111-132, figs. 5.)

This is a report of a continuation of steer-feeding experiments reported in Bulletin 218 to determine (1) the comparative value of cottonseed hulls, corn stover, and corn silage combined, and corn silage alone, in conjunction with cottonseed meal; (2) the most economical amount of cottonseed meal to feed with corn silage and corn stover; (3) the influence of corn silage in increasing the amount and in prolonging the period during which cottonseed meal can be fed safely and with profit.

Sheep Raising. By R. S. Curtis. (Bulletin 223, pp. 3-30, figs. 11.)

The adaptability of the State to the sheep industry is pointed out and practical information is given as to the more important breeds and the care and management of sheep under North Carolina conditions.

NORTH DAKOTA STATION, Agricultural College, J. H. Worst, Director.

Barn Plans. By R. M. Dolve. (Bulletin 97, pp. 59, figs. 24.)

Plans for barns for horses, dairy and beef cattle, hogs, and sheep and a laying house for hens suited to North Dakota conditions are described and illustrated.

Twenty-second Annual Report, 1912. (Annual Report, 1912, pp. 103, figs. 2.)

This contains a brief administrative report by the director; a review of the year's work in the departments of animal husbandry, chemistry, botany and plant pathology, horticulture, and veterinary medicine; and a financial statement.

OHIO STATION, Wooster, C. E. Thorne, Director.

The Rejuvenation of Orchards: Report of Spraying, Fertilization, and Thinning Experiments in Southeastern Ohio, 1911. By F. H. Ballou. (Bulletin 240, pp. 479-512, figs. 10.)

This is an account of a continuation of work reported in Bulletins 217 and 224 and includes tests of the comparative value of Bordeaux mixture and lime sulphur for the control of apple diseases and of the effect of fertilizers and thinning on the production of fruit in a number of orchards of southeastern Ohio.

TEXAS STATION, College Station, B. Youngblood, Director.

Commercial Fertilizers in 1911-12. By G. S. Fraps. (Bulletin 149, pp. 4-29, figs. 2.)

The results of analyses of fertilizers inspected by the station during 1911-12 are reported with explanations.

Composition and Digestibility of the Ether Extract of Hays and Fodders. By G. S. Fraps and J. B. Rather. (Bulletin 150, pp. 3-29.)

Previous investigations on the subject by others are reviewed and studies of the composition of the ether extract of hays and fodders and the digestibility of the respective constituents are reported. The experimental methods are described.

Relation of the Total Nitrogen of the Soil to Its Needs as Shown in Pot Experiments. By G. S. Fraps. (Bulletin 151, pp. 3-15, figs. 4.)

Pot experiments to determine the relation of the growth, weight, and nitrogen content of crops to the total nitrogen of the soil are reported.

The Heating of Corn Chops. By G. S. Fraps. (Bulletin 152, pp. 3-5.)

Determinations of the moisture content in a number of samples of spoiled corn chops and a study of the results of such determinations since 1909 are reported with a view of ascertaining the cause of the high percentage of moldy corn chops during the spring of 1912.

A Test of the Relative Values of Cottonseed Meal and Silage, and Cottonseed Meal and Cottonseed Hulls for Fattening Cattle. By J. C. Burns and T. P. Metcalfe. (Bulletin 153, pp. 3-14, figs. 4.)

One season's feeding experiments with steers to test the profitableness of cottonseed meal combined with silage as compared with cottonseed meal combined with cottonseed hulls under Texas conditions are reported.

WASHINGTON STATION, Pullman, R. W. Thatcher, Director.

The Milling Quality of Washington Wheats. By R. W. Thatcher. (Popular Bulletin 39, pp. 8.)

This is a summarized statement of analyses and milling tests of samples of Washington wheat, reports of which have already been published in Bulletins 84, 91, and 100 of the station.

The Char-pit Method of Destroying Stumps. By H. W. Sparks. (Popular Bulletin 40, pp. 8, figs. 5.)

This is a summarized description of this method more fully described in Bulletin 101 of the station.

Butter Making on the Farm. By A. B. Nystrom. (Popular Bulletin 41, pp. 4.)

Brief directions for making butter on the farm are given.

Alfalfa Seed Production. By R. W. Thatcher. (Popular Bulletin 42, pp. 4.)

Attention is called to preliminary experiments in the production of alfalfa seed in eastern Washington, both independent of and in cooperation with this department, with a view of determining the commercial possibilities of the industry.

Spraying Calendar for 1912. By R. K. Beattie and A. L. Melander. (Popular Bulletin 43, folio.)

Directions for spraying under Washington conditions are given.

Some Problems in Soil Fertility. By G. Severance. (Popular Bulletin 44, pp. 8.)

Factors influencing the fertility of soils with special reference to Washington soils are briefly discussed.

The Control of the Codling Moth. By A. L. Melander. (Popular Bulletin 45, pp. 8, figs. 7.)

The life history of the insect and methods of spraying for its control are briefly described.

WISCONSIN STATION, Madison, H. L. Russell, Director.

The Climate of Wisconsin and its Relation to Agriculture. By A. R. Whitson and O. E. Baker. (Bulletin 223, pp. 65, pl. 1, figs. 25.)

General principles of climate, the climatic and weather conditions of Wisconsin and their relations to the agriculture of the State are discussed in detail, the meteorological data being compiled from records of a number of stations of the United States Weather Bureau.

Selecting Steers for Feeding. By J. L. Tormey. (Bulletin 224, pp. 30, figs. 13.)

This bulletin discusses methods of grading up beef cattle, describes the characteristics of high-class feeder steers, market classes and grades of beef cattle, and the more important factors in the selecting and feeding of cattle for market and the process of marketing.

Studies on the Factors Concerned in the Ripening of Cheddar Cheese. By E. G. Hastings, Alice C. Evans, and E. B. Hart. (Research Bulletin 25, pp. 54, figs. 6.)

Normal ripening of Cheddar cheese as based on investigations by others is discussed and studies of the rôle of *Bacterium lactis acidi* in the ripening of this cheese and methods of distinguishing chromogenic cocci and liquefying organisms are reported.

Sewage Disposal for Rural Homes. By C. A. Ocock and W. H. Wright. (Circular of Information 34, pp. 15, figs. 10.)

The need of modern systems of sewage disposal in rural homes is pointed out and directions are given as to the cost and methods of construction of septic tanks of the single and the double tank systems for the disposal of farm sewage. The use and construction of a grease trap as an adjunct to the sewage system are also described.

The Feed Unit System for Determining the Economy of Production by Dairy Cows. By F. W. Woll. (Circular of Information 37, pp. 15.)

This circular describes the origin and application of the so-called feed-unit system for determining the economy of production of dairy cows or breeds of cows, illustrating its principles by application to records of cows in the college herd. A bibliography is added.



United States Department of Agriculture,

OFFICE OF EXPERIMENT STATIONS.

A. C. TRUE, Director.

LIST OF STATION PUBLICATIONS RECEIVED BY THE OFFICE OF EXPERIMENT STATIONS DURING NOVEMBER, 1912.

NOTE.—The station publications noted in this list are not distributed by the Department of Agriculture, but can usually be obtained, as far as the supply will permit, by applying to the stations issuing them.

ALABAMA COLLEGE STATION. Auburn, J. F. Duggar, Director.

Steer Feeding in Alabama. By D. T. Gray and W. F. Ward. (Bulletin 163, pp. 57-133, figs. 13.)

Feeding experiments with steers conducted in cooperation with this department to test the profitability of winter feeding, the value of silage and Johnson-grass hay as supplementary feeds to rations of cottonseed meal and hulls, the practicability of wintering cattle as a preliminary to summer feeding, the value of cottonseed cake as a supplement to pasture, the value of shelter for fattening cattle, and the profitability of early as compared with late fattening on pasture under Alabama conditions are reported.

Vegetable Growing in Alabama. By P. F. Williams and H. M. Conolly. (Circular 14, pt. 2, pp. 59-83, figs. 2.)

This is part 2 of this circular, and gives brief directions as to the growing, storing, and canning, and control of insects of different vegetables under Alabama conditions.

ALABAMA TUSKEGEE STATION. Tuskegee Institute, G. W. Carver, Director.

The Pickling and Curing of Meat in Hot Weather. By G. W. Carver. (Bulletin 24, pp. 5-22.)

The curing of meat in hot weather, various pickling solutions for its preservation, and methods of preparing a number of dishes from pork are described.

CALIFORNIA STATION. Berkeley, T. F. Hunt, Director.

Enological Investigations. By F. T. Bioletti and W. V. Cruess. (Bulletin 230, pp. 17-118, figs. 21.)

Studies of the utility and methods of application of sulphurous acid and pure yeast in wine making and tests of their use in a winery under practical conditions in California are reported in detail.

Boys' and Girls' Clubs. By E. B. Babcock, W. G. Hummel, and F. L. Griffin. (Circular 80, pp. 8.)

The purpose and methods of organization of boys' and girls' clubs are briefly described for the information of teachers.

The Sweet Pea Growing Clubs. By F. L. Griffin. (Circular 81, pp. 16, figs. 3.)

The organization of sweet-pea clubs in California and cultural directions to contestants, emphasizing the best methods of growing the flowers, are described.

CONNECTICUT STATE STATION, New Haven. E. H. Jenkins, Director.

Report on Commercial Fertilizers, 1912. By E. H. Jenkins and J. P. Street. (Annual Report, 1912, pt. 1, pp. 93.)

Analyses and valuations of fertilizers inspected by the station during 1912 are reported, with explanations.

HAWAII FEDERAL STATION, Honolulu. E. V. Wilcox, Special Agent in Charge.

The Use of Dynamite in Farming. By E. V. Wilcox. (Press Bulletin 38, pp. 7.)

The unfavorable drainage and aeration conditions of Hawaiian soils are briefly described, with directions for their improvement by the use of dynamite as indicated by experiments at the station.

INDIANA STATION, Lafayette, A. Goss, Director.

Commercial Feeding Stuffs. By W. J. Jones, jr., et al. (Bulletin 161, pp. 423-670.)

This contains the text of the Indiana feeding-stuff law, with summary of the principal requirements of the law; a list of cases of violation; and reports analyses of samples of feeding stuffs inspected by the station during 1911, with explanation of terms.

LOUISIANA STATIONS, Baton Rouge, W. R. Dodson, Director.

Twenty-fourth Annual Report, 1911. By W. R. Dodson. (Annual Report, 1911, pp. 24.)

This contains a report of sugar work at Audubon Park; work in the different departments of the State station at Baton Rouge, of the North Louisiana station at Calhoun, and that of the rice experiment station at Crowley; and a financial statement.

MAINE STATION, Orono, C. D. Woods, Director.

Elm Leaf Curl and Woolly Apple Aphid. By Edith M. Patch. (Bulletin 203, pp. 235-258, pls. 3, figs. 10.)

Observations as to the migration of the woolly aphid from elm leaf curl to apple are reported. A brief account of the habits and injuries and methods of control of the insect, with references to the literature of the subject are given.

MASSACHUSETTS STATION, Amherst, W. P. Brooks, Director.

Inspection of Commercial Feed Stuffs. By P. H. Smith, G. R. Pierce, and R. W. Ruprecht. (Bulletin 142, pp. 48.)

The text of the Massachusetts feeding-stuffs law which took effect September 1, 1912, is given, and analyses of commercial feeding stuffs inspected by the station during 1911 are reported, with explanations of composition, cost, and valuation.

Twenty-fourth Annual Report, 1911. (Annual Report, 1911, pt. 1, pp. 287, pls. 3, figs. 8.)

This contains the usual executive and departmental reports reviewing the year's work of the station, a report of the treasurer for the year, and the following special articles: Heredity, correlation, and variation in garden peas; seed work for the year 1911; rust on Vinca; frost cracks; a new method for the approximate mechanical analysis of soils; the present status of soil sterilization; influence of soil decoctions from sterilized and unsterilized soils upon bacterial growth; the effects of positive and negative electrical charges on seeds and seedlings; electrical resistance of trees; the chemistry of arsenical insecticides; the natural fertility of cranberry bogs; types of corn suited to Massachusetts; and the digestibility of cattle foods.

Twenty-fourth Annual Report, 1911. (Annual Report, 1911, pt. 2, pp. 90, figs. 2.)

This contains a brief summary by the director of the principal results of the work of the station during the year and the following special articles: Alfalfa cooperative experiments; types of corn best suited to Massachusetts; complete analyses of corn grown in competition for the Bowker prize; methods of selection for plant improvement; experiments to determine the nitrogen absorption capacity of several well-known chemicals; chemical methods for the preservation of manure; tobacco injury due to malnutrition of overfertilization; digestion experiments with cattle feeds; bronzing of maple leaves; coarse-nozzle versus mist-nozzle spraying; experiments with rose soils; a notable elm tree; some observations on the growth of elm trees; Do we need a seed law in Massachusetts? diseases more or less common during the year; and insects of the year 1911 in Massachusetts.

MISSOURI FRUIT STATION, Mountain Grove, P. Evans, Director.

Spraying Machinery. By F. W. Faurot. (Bulletin 22, pp. 46, pls. 14.)

This is a revised reprint of Bulletin 20 of the station.

NEBRASKA STATION, Lincoln, E. A. Burnett, Director.

Twenty-fifth Annual Report, 1911. (Annual Report, 1911, pp. XXXII + 287, figs. 38.)

This contains the director's summary report and reports of the year's work at substations at North Platte, Valentine, Scottsbluff, and Culbertson; a financial statement; and special papers as follows: The photometric and the colorimetric determination of humus; the mineral constituents of some soils of the eastern Nebraska loess; on the sampling of prairie soils; on the sampling of cultivated soils; some notes on alfalfa and clover residues as sources of soil nitrogen; a cooperative investigation on the losses of nitrogen, organic matter, and humus from some Nebraska soils; on the determination of soil moisture; the determination of total manganese in soils; the inheritance of the ligule and auricles of corn leaves; the inheritance of certain forms of chlorophyll reduction in corn leaves; the moisture content of field soils under different treatments; tests of corn planters with graded corn; soil mulch; the nitrogen content of some Nebraska soils; the relative amounts of nitrogen, carbon, and humus in some Nebraska soils; variation in yield and methods of arranging plats to secure comparative results; preliminary report on effect of close and broad breeding on productiveness in maize; evaporation from a free water surface at Lincoln, Nebr.; experiments with tuberculin; some investigations of the cedar rust fungus, *Gymnosporangium juniperi-virginianæ*; a study of the movement of water in a uniform soil under artificial conditions.

NEW HAMPSHIRE STATION, Durham, J. C. Kendall, Director.

Some Data on the Inheritance of Horns in Sheep. By T. R. Arkell. (Bulletin 160, pp. 35, tables 7, figs. 44.)

This is a partial report upon a comprehensive study of inheritance in sheep undertaken by the New Hampshire station, with the aid of C. B. Davenport, of the Carnegie Institution, and reports results of a study of the inheritance of horns in various crosses of the Merino, Dorset, and Down breeds of sheep.

Fungicides in the Apple Orchard. By C. Brooks. (Bulletin 161, pp. 15.)

This is a summary of five seasons' spraying experiments in different orchards of the State conducted in part in cooperation with this department to determine the value of the more important insecticides and fungicides for the control of insects and diseases of the apple under New Hampshire conditions.

The Fertilizer Inspection for 1912. By B. E. Curry and T. O. Smith. (Bulletin 162, pp. 13.)

Analyses of samples of fertilizer collected by the station during 1912 are reported.

NEW JERSEY STATIONS, New Brunswick, J. G. Lipman, Director.

Nursery Insects. By H. B. Weiss and R. S. Patterson. (Circular 15, pp. 3-29, figs. 13.)

The life history and injuries of the more important insects of nurseries and methods of control under New Jersey conditions are described. Brief descriptive notes on spraying mixtures and references to the literature of the subject are also given.

NEW YORK STATE STATION, Geneva, W. H. Jordan, Director.

Thirtieth Annual Report, 1911. (Annual Report, 1911, pp. VII + 352, pls. 29, figs. 13.)

This contains the usual administrative report by the director; reprints of Bulletins 333 to 339, Technical Bulletin 18, and Circulars 16 and 17; and a financial statement. A list of periodicals received by the station and meteorological records for 1911 are appended.

NORTH DAKOTA STATION, Agricultural College, J. H. Worst, Director.

The Silo and its Construction. By J. H. Shepperd, G. L. Martin, and R. M. Dolve. (Bulletin 98, pp. 27, figs. 13.)

The more important facts underlying the construction, filling, and cost of different types of silos under North Dakota conditions are discussed.

The Adjustment and Repair of Self-binders. By R. M. Dolve. (Bulletin 99, pp. 28, figs. 18.)

The more important parts of a self-binder and methods of repairing and adjusting them are described. An appliance for wet-land harvesting devised by the station is also described.

Cropping Systems for Wheat Production. By J. H. Shepperd and R. C. Doneghue. (Bulletin 100, pp. 63, figs. 4.)

Studies of the effect of different long-time crop rotations on the yield of wheat, conducted by the North Dakota station since 1892, are reported and discussed.

OHIO STATION, Wooster. C. E. Thorne, Director.

Horticultural Information. (Circular 124, pp. 143-147.)

A list of books, periodicals, and bulletins on horticultural subjects is given to acquaint farmers with such sources of information.

Feeding Dairy Cows. By C. C. Hayden. (Circular 128, pp. 181-211, figs. 2.)

Tables and directions are given for the use of farmers in preparing rations for dairy cows.

PENNSYLVANIA STATION, State College, R. L. Watts, Acting Director.

Silage for Steers. Wintering Beef Breeding Cows. By W. A. Cochel. (Bulletin 118, pp. 20, figs. 9.)

This is a continuation of work reported in Bulletin 102 and in the annual report of the station for 1911, and reports feeding experiments to determine to what extent silage could be profitably used in the feeding of steers and the value of silage in conjunction with cottonseed meal for wintering beef breeding cows.

PORTO RICO FEDERAL STATION, Mayaguez, D. W. May, Special Agent in Charge.

A Study of Mosquitoes in San Juan, Porto Rico. By W. V. Tower. (Circular 14, pp. 23, fig. 1.)

Determinations of species of mosquitoes in San Juan are reported with observations as to the extent of their occurrence, relation to malaria and yellow fever, and methods of control.

Suggestions on Coffee Planting for Porto Rico. By T. B. McClelland. (Circular 15, pp. 26, pls. 4, fig. 1.)

Information is given as to methods of transplanting, cultivating, fertilizing, pruning, and shading coffee plants under Porto Rico conditions.

RHODE ISLAND STATION, Kingston, H. J. Wheeler, Director.

The Effect of Cow Dung on the Availability of Rock Phosphate.

By B. L. Hartwell and F. R. Pember. (Bulletin 151, pp. 165-174, pl. 1.)

Pot experiments to determine the effect of mixing fresh cow dung and rock phosphate under Rhode Island conditions on the amount of available phosphoric acid are reported.

SOUTH CAROLINA STATION, Clemson College, J. N. Harper, Director.

Hog Cholera and its Control. By M. R. Powers. (Bulletin 168, pp. 31, figs. 10.)

The symptoms of hog cholera and sanitary methods for its prevention are briefly described, with directions for inoculating hogs with the hyperimmune serum.

Feeding Beef Cattle in South Carolina. By A. Smith. (Bulletin 169, pp. 3-13, figs. 3.)

Feeding experiments with steers to determine the relative value of cottonseed hulls, corn stover, and corn silage as roughage when fed with cottonseed meal, are reported.

UTAH STATION, Logan, E. D. Ball, Director.

The Production of Dry Matter with Different Quantities of Irrigation Water. By J. A. Widtsoe. (Bulletin 116, pp. 64, figs. 20.)

This is one of a series of bulletins dealing with irrigation investigations at the Utah station in cooperation with this office, and reports a study of the amount of dry matter produced by different crops from applications of definite amounts of irrigation water.

The Yields of Crops with Different Quantities of Irrigation Water.

By J. A. Widtsoe, and L. A. Merrill. (Bulletin 117, pp. 65-119, figs. 13.)

Data for yield of various crops obtained with different amounts of irrigation at the Utah station are reported and discussed in detail in their relation to rational practice of irrigation. The bulletin is one of a series of irrigation investigations conducted by the station in cooperation with this office.

Methods for Increasing the Crop Producing Power of Irrigation Water.

By J. A. Widtsoe and L. A. Merrill. (Bulletin 118, pp. 121-164, fig. 1.)

This is a part of the general irrigation investigations conducted by the Utah station in cooperation with this office, and reports studies of the effect of time and manner of application of water, cultivation, and rate of seeding on the production of different crops, and the practicability of utilizing early and flood waters.

The Effect of Irrigation on the Growth and Composition of Plants at Different Periods of Their Development. By J. A. Widtsoe and R. Stewart. (Bulletin 119, pp. 165-200, fig. 1.)

Studies of the yield of dry matter and the proportion and chemical composition of plant parts under varying amounts of irrigation as determined by experiments at the Utah station in cooperation with this office, are reported.

WASHINGTON STATION, Pullman, R. W. Thatcher, Director.

The Nitrogen and Humus Problem in Dry Farming. By R. W. Thatcher. (Bulletin 105, pp. 16.)

Previous investigations by others on the subject are briefly reviewed and determinations of the organic matter, humus, and nitrogen contents in different cropped and fallow soils of the dry-farming section of Washington, with a view of determining the effect of dry-farming systems upon the humus supply of the soil, are reported.

Plant Diseases Induced by *Sclerotinia perplexa* n. sp. By W. H. Lawrence. (Bulletin 107, pp. 3-22, figs. 9.)

Studies of the characteristics of a root-rot disease of different cultivated plants of Washington caused by a fungus which the author proposes to name *S. perplexa* and the action of the fungus upon different host plants and its behavior in culture media are reported.

Bluestem of the Black Raspberry. By W. H. Lawrence. (Bulletin 108, pp. 3-30, figs. 27.)

Studies of the characteristics and mode of injury of the disease as shown by its effect on the stems, leaves, fruit, and roots of the blackberry plant, and the characteristics of the causal fungus which the author proposes to name *Acrostalagmus caulophagus* n. sp. are reported. Tests of the effect of copper sulphate and Bordeaux mixture for its control are also reported.

WEST VIRGINIA STATION, Morgantown, E. D. Sanderson, Director.

Packing Apples and Peaches. By W. H. Alderman. (Bulletin 139, pp. 275-300, figs. 17.)

Directions are given for the packing of apples in barrels and in boxes and for the packing of peaches. A list of dealers in packing supplies is also given.

WISCONSIN STATION, Madison, H. L. Russell, Director.

Studies in Dairy Production Based on the Records Secured in the Wisconsin Dairy Cow Competition, 1909-1911. By F. W. Woll. (Research Bulletin 26, pp. 55-135, figs. 2.)

This is an account of studies of the more important relationships between feed consumption, milk and butter-fat production, period of lactation, and individual characteristics of cows as brought out in the Wisconsin dairy-cow competition reported in Bulletin 226. A comparison of yearly, monthly, and 7-day records and studies of the reliability of semiofficial tests are reported.

Distribution of Licensed Stallions in the Counties of Wisconsin During 1912. By A. S. Alexander. (Circular of Information 40, pp. 98.)

This circular gives a directory of owners of licensed stallions and jacks by counties in Wisconsin for 1912 and a list of recognized American stallion registers. Statistics on distribution in the State of pure-bred, grade, and scrub stallions and a copy of a suggested constitution and by-laws for the organization of county horse breeders' clubs are also given.

The Milk Sediment Test and its Applications. By A. C. Baer. (Circular of Information 41, pp. 17, figs. 12.)

This is an account of studies of the effect of covered milk pails, straining or clarifying, and separating on the quality and sanitary condition of milk as determined by the sediment test previously described in Bulletin 194 of the station.



United States Department of Agriculture,

OFFICE OF EXPERIMENT STATIONS.

A. C. TRUE, Director.

LIST OF STATION PUBLICATIONS RECEIVED BY THE OFFICE OF EXPERIMENT STATIONS DURING DECEMBER, 1912.

NOTE.—The station publications noted in this list are not distributed by the Department of Agriculture, but can usually be obtained, as far as the supply will permit, by applying to the stations issuing them.

ALABAMA COLLEGE STATION, Auburn. J. F. Duggar, Director.

Curing Meat on the Farm. By D. T. Gray and L. W. Summers. (Bulletin 166, pp. 179-204, figs. 4.)

Studies of methods of curing meat without the use of ice, the shrinkage of meat during the curing processes, and the influence of different feeds upon shrinkage of meat under Alabama conditions are reported in detail. A type of smokehouse used in the experiments is described.

Rules and Regulations of the Alabama State Board of Horticulture Governing the Importation of Articles Liable to Contain the Mexican Cotton Boll Weevil. (Circular 16, pp. 8, fig. 1.)

The text of these regulations which have been adopted to take effect June 5, 1912, is given.

CALIFORNIA STATION, Berkeley, T. F. Hunt, Director.

Commercial Fertilizers. By J. S. Burd. (Bulletin 232, pp. 399-457.)

Analyses and valuations of fertilizers inspected by the station during the fiscal year ended June 30, 1912, are reported.

Three Years' Work of the Ferndale (Humboldt County) Cow-testing Association. By L. Anderson. (Bulletin 233, pp. 457-482, figs. 11.)

The objects and organization of cow-testing associations are briefly described and the record of milk and butter-fat production of eight herds of the Ferndale association is summarized and discussed. An appendix contains a copy of the constitution and by laws of this association.

COLORADO STATION, Fort Collins, C. P. Gillette, Director.

Some Poultry Diseases Met with in Colorado. By B. F. Kaupp. (Bulletin 185, pp. 3-30, figs. 29.)

The more important parasitic and nonparasitic diseases of poultry and methods of treatment under Colorado conditions are described.

CONNECTICUT STATE STATION, New Haven, E. H. Jenkins, Director.

Seventeenth Report on Food Products and Fifth Report on Drug Products, 1912. By J. P. Street et al. (Annual Report, 1912, pt. 2, pp. 95-208.)

Analyses of foods, drugs, and proprietary compounds inspected by the station during the year are reported and discussed.

ILLINOIS STATION, Urbana, E. Davenport, Director.

Economic Factors in Cattle Feeding. II, Argentina as a Factor in International Beef Trade. By H. W. Mumford. (Circular 164, pp. 18, figs. 11.)

This circular, the second of a series on this subject, reports a study of the present status and opportunities for development of the beef-cattle industry of Argentina in their bearing upon beef production in this country.

Shall We Use "Complete" Commercial Fertilizers in the Corn Belt? By C. G. Hopkins. (Circular 165, pp. 12.)

The above question is answered negatively for the permanent and the tenant farmer.

INDIANA STATION, Lafayette, A. Goss, Director.

Moisture Control of Butter—I. By O. F. Hunziker, H. C. Mills, and G. Spitzer. (Bulletin 159, pp. 283-360, figs. 16.)

Studies of the effect of the season, chemical composition of butter fat, size of fat globules, and mechanical firmness of butter on the moisture content of butter are reported in detail.

Moisture Control of Butter—II. By O. F. Hunziker, H. C. Mills, and G. Spitzer. (Bulletin 160, pp. 361-419, figs. 4.)

This is a continuation of Bulletin 159 and reports a study of various factors which are under the control of the butter maker on the moisture content of butter, together with brief directions for the control of the moisture of butter.

Winter Steer Feeding, 1911-12. By J. H. Skinner and F. G. King. (Bulletin 163, pp. 713-749.)

This is a continuation of feeding experiments reported in Bulletins 129, 130, 136, and 153 of the station, the new work reported being a comparison of the feeding value for steers of clover hay and oat straw in combination with corn silage.

IOWA STATION, Ames, C. F. Curtiss, Director.

Volatile Aliphatic Acids of Corn Silage. By A. W. Dox and R. E. Neidig. (Research Bulletin 7, pp. 3-32.)

Previous investigations on the subject by others are briefly reviewed, and a study of the relative proportion of volatile aliphatic acids in silage from three different types of silos at the Iowa Station is reported.

KANSAS STATION, Manhattan, E. H. Webster, Director.

Registered Feeding Stuffs. (Feeding Stuffs Bulletin 23, pp. 14.)

This contains a brief statement of the principal requirements of the Kansas feeding stuffs law and a list of feeds registered before September 30, 1912, with names of firms and guaranteed analyses of feeds.

KENTUCKY STATION, Lexington, J. H. Castle, Director.

Forage Poisoning or So-called Cerebrospinal Meningitis in Horses, Cattle, and Mules. By R. Graham. (Bulletin 167. pp. 367-383, pls. 4.)

A study of the distribution, symptoms, and cause of this disease during the fall and winter months of 1911-12 in Kentucky is reported with preventive measures. A bibliography of the literature is added.

MAINE STATION, Orono, C. D. Woods, Director.

A Case of Triplet Calves with Some General Considerations Regarding Multiple Gestation in Normally Uniparous Animals. By R. Pearl. (Bulletin 204, pp. 259-282, pl. 1.)

A case of triplet calves produced by a cow with hereditary tendency toward multiple gestation is described in detail and discussed in its bearing on some general problems of practical and theoretical animal breeding.

MARYLAND STATION, College Park, H. J. Patterson, Director.

Increasing the Durability of Fence Posts. By F. W. Besley. (Bulletin 163, pp. 243-262, figs. 4.)

Experiments in cooperation with the Forest Service of this department in treating fence posts of different kinds of wood with creosote are reported.

MASSACHUSETTS STATION, Amherst, F. W. Morse, Acting Director.

Meteorological Observations. By J. E. Ostrander and H. W. Angier. (Meteorological Bulletin 286, pp. 4.)

This is a summary for October, 1912.

Meteorological Observations. By J. E. Ostrander and H. W. Angier. (Meteorological Bulletin 287, pp. 4.)

This is a summary for November, 1912.

An Act to Regulate the Use of Utensils for Testing the Composition or Value of Milk and Cream. Salient Points in the Act. Suggestions for Making the Babcock Test. (Circular 33. pp. 11, figs. 2.)

The text of the law approved March 9, 1912, is given with explanations of its principal requirements. Brief directions for making the Babcock test are also given.

An Act to Regulate the Sale and Analysis of Food Stuff Used for Feeding Live Stock and Poultry. (Circular 34. pp. 7.)

The text of the law approved April 25, 1912, is given.

MICHIGAN STATION, East Lansing, R. S. Shaw, Director.

Neutral Ammonium Citrate Solution. By A. J. Patten and C. S. Robinson. (Technical Bulletin 12, pp. 3-12, figs. 3.)

An electrical conductivity method for preparing neutral ammonium citrate is described, together with the results of tests of its accuracy in comparison with other methods.

Twenty-fifth Annual Report, 1912. (Annual Report, 1912, pp. 607, figs. 335.)

This contains a financial statement, reports of the director and the heads of the different departments of the station, and reprints of Bulletins 265-267; Circulars 12-17; and Special Bulletins 56-58.

MONTANA STATION, Bozeman, F. B. Linfield, Director.

Dry Farm Moisture Studies. By A. Atkinson et al. (Bulletin 87, pp. 47-78, figs. 15.)

Studies of the moisture content in cultivated and uncultivated fallow, and differently cropped soil plats, and in open and closed ranges under dry-farming conditions of Montana are reported.

Ninth Annual Report of the State Entomologist of Montana. By R. A. Cooley. (Bulletin 88, pp. 81-106.)

This bulletin gives descriptive notes on the principal insects and the nature of their injuries observed during the year, and describes the status of the bee-keeping industry and of the spotted fever tick investigations in Montana. A copy of the Montana insecticide law approved in 1911 is also given, with explanations.

Eighteenth Annual Report. 1911. (Annual Report, 1911, pp. 107-137, figs. 4.)

This contains a financial statement, a brief administrative report by the director reviewing the year's work of the different departments of the station, and meteorological data for the year.

NEW JERSEY STATIONS, New Brunswick, J. G. Lipman, Director.

Analyses and Valuations of Commercial Fertilizers. Analyses of Fertilizer Supplies, Home Mixtures, and Special Compounds. By C. S. Cathcart et al. (Bulletin 252, pp. 3-41.)

Analyses and valuations of commercial fertilizers and fertilizer materials inspected by the station during 1912 are reported, with explanations.

Feed, Care, and Management of Breeding Stallions, Brood Mares, Work Horses, and Foals. By F. C. Minkler. (Circular 8, pp. 18, pls. 3.)

Information is given as to the practical management, feeding, and care of these classes of horses, with a view to improving New Jersey farm horses especially.

Digest and Copy of Fertilizer Law. (Circular 9, pp. 8.)

This contains the text and a brief digest of the New Jersey fertilizer law approved in March, 1912.

Digest and Copy of Feeding Stuffs Law. (Circular 10, pp. 8.)

The text of the New Jersey feeding stuffs law approved March 28, 1912, is given, with brief explanations.

Digest and Copy of Insecticide Law. (Circular 11, pp. 4.)

This contains the text and brief explanations of the New Jersey insecticide law approved March 19, 1912.

Digest and Copy of Seed Law. (Circular 12, pp. 3.)

The text of the New Jersey seed law, approved March 26, 1912, is given with explanations as to the station's policy in testing seeds.

The House Mosquito, a City, Town, and Village Problem. (Circular 13, pp. 12.)

The life history of the house mosquito (*Culex pipiens*) is briefly described with directions for the control of the pest.

The First Season with the Peach Orchard. By M. A. Blake. (Circular 14, pp. 3-31, pls. 10, fig. 1.)

Information is given as to the selection of the site and soil for peach orchards; the grade, quality, cost, and treatment of nursery trees before

planting; varieties; preparation and fertilization of the orchard; and the setting and pruning of young trees under New Jersey conditions.

NEW YORK CORNELL STATION, Ithaca, L. H. Bailey, Director.

Further Experiments on the Economic Value of Root Crops for New York. By E. R. Minns. (Bulletin 317, pp. 545-566, figs. 9.)

This is a continuation of Bulletins 243, 244, 267, and 268 of the station, and reports four seasons' experiments to determine the cost and methods of growing, the comparative composition, and total production of nutrients in root crops and silage corn under New York conditions.

Constitutional Vigor in Poultry. By C. A. Rogers. (Bulletin 318, pp. 571-614, figs. 11.)

Experiments with two breeds of chickens to determine the effect of constitutional vigor on production, and reproductive powers of the first and second generations are reported.

Computing Rations for Farm Animals. By E. S. Savage. (Bulletin 321, pp. 3-34, figs. 4.)

The composition of the animal body and various food products and the function of food are briefly discussed, and directions are given for the preparing of rations for different farm animals.

Propagation of Starter for Butter Making and Cheese Making. By E. S. Guthrie and W. W. Fisk. (Circular 13, pp. 4, figs. 2.)

This is a revision of Circular 10 of the station.

Working Plans of Cornell Poultry Houses. By C. A. Rogers. (Circular 14, pp. 5-24, figs. 27.)

This circular contains working plans and a brief explanation of several types of approved poultry houses and appliances.

NEW YORK STATE STATION, Geneva, W. H. Jordan, Director.

Inspection of Feeding Stuffs. By E. L. Baker et al. (Bulletin 351, pp. 187-317.)

Analyses of commercial feeding stuffs collected during the fall and winter of 1911-12 are reported with names and addresses of manufacturers and brands. The main requirements of the State feeding stuffs law are stated.

Lime Sulphur versus Bordeaux Mixture as a Spray for Potatoes, II. By M. T. Munn. (Bulletin 352, pp. 319-326, pl. 1.)

This is a continuation of experiments reported in Bulletin 347 of the station, and gives the results of comparative tests of these sprays on potatoes during 1912.

Milking Machines: Effect of the Machine Method of Milking upon the Milk Flow. By G. A. Smith and H. A. Harding. (Bulletin 353, pp. 327-361, pl. 1, fig. 1.)

Previous investigations on the subject by others are reviewed and the results of four seasons' comparative tests of the effect of hand versus machine milking on the milk production of cows are reported.

Crown Rot of Fruit Trees: Field Studies. By J. G. Grossenbacher. (Technical Bulletin 23, pp. 3-59, pls. 23.)

Field studies in different orchards of the State from 1909 to 1912 to determine the nature and causes of crown rot and the relation of environmental conditions and varieties to the occurrence of the disease are reported. Investigations on the subject by others are reviewed.

NORTH DAKOTA STATION, Agricultural College, J. H. Worst, Director.

Potato Warehouse Plans. By R. M. Dolve. (Bulletin 101, pp. 26, figs. 9.)

Plans of potato warehouses providing storage in the basement only, and in both basement and superstructure, are described and illustrated. An inexpensive potato cellar is also described.

Special Bulletin Food Department. (Special Food Bulletin, 2 (1912), No. 9, pp. 145-148.)

This contains a list of the more common patent-medicine preparations and a statement of their composition.

Special Bulletin Food Department. (Special Food Bulletin, 2 (1912), No. 10, pp. 149-164.)

This bulletin reports the results of inspection of milk, dairies, and restaurants, and analyses of foods and proprietary compounds. Notes on paint legislation, classification of eggs, the use of saccharin, and the injuriousness of cigarette smoking for boys are added.

OHIO STATION, Wooster, C. E. Thorne, Director.

Forage Crops for Swine. By B. E. Carmichael and G. R. Eastwood. (Bulletin 242, pp. 551-564, figs. 6.)

Feeding experiments with pigs to determine the comparative value of different forage crops in conjunction with concentrates as supplements to corn are reported and discussed.

RHODE ISLAND STATION, Kingston, B. L. Hartwell, Director.

Analyses of Commercial Fertilizers. By B. L. Hartwell et al. (Inspection Bulletin, June, 1912, pp. 8.)

Analyses and valuations of "potato" fertilizers during the spring of 1912 are reported.

Analyses of Commercial Fertilizers. By B. L. Hartwell et al. (Inspection Bulletin, September, 1912, pp. 12.)

Analyses and valuations of "potato" fertilizers and wood ashes inspected by the station in 1912 are reported.

Analyses of Commercial Fertilizers. By B. L. Hartwell et al. (Inspection Bulletin, October, 1912, pp. 8.)

This bulletin and the two noted above contain the analyses and valuations of fertilizers collected during the season of 1912.

SOUTH CAROLINA STATION, Clemson College, J. N. Harper, Director.

The Corn Weevil (*Calandra oryza*). By W. P. Gee. (Bulletin 170, pp. 16, figs. 2.)

This bulletin points out the extent of injury to stored corn and other grains by the corn weevil (*C. oryza*) and describes the life history of the insect, together with the results of fumigation experiments with carbon disulphid for its control. Tests of the effect of different strengths of carbon disulphid on the viability of corn are included.

TEXAS STATION, College Station, B. Youngblood, Director.

Commercial Feeding Stuffs. By W. L. Boyett and G. S. Fraps.
(Bulletin 154, pp. 3-71.)

The principal requirements of the Texas feeding-stuffs law are summarized, and the results of analyses of feeds inspected by the station during 1911-12 are reported with explanations.

UTAH STATION, Logan, E. D. Ball, Director.

The Chemical Composition of Crops as Affected by Different Quantities of Irrigation Water. By J. A. Widtsoe and R. Stewart.
(Bulletin 120, pp. 203-240.)

Studies of the composition (including in some cases cooking and milling tests) of different crops grown with different quantities of irrigation water are reported. The bulletin is one of the series dealing with irrigation investigations at the Utah station conducted in cooperation with this office.

VERMONT STATION, Burlington, J. L. Hills, Director.

Plant Diseases in 1911. Potato Spraying Experiments in 1911. By B. F. Lutman. (Bulletin 162, pp. 35-45, fig. 1.)

A statement of the more important plant diseases observed during 1911 is given with a brief progress report on the spraying experiments with potatoes to determine the profitability of consecutive yearly spraying of the crop.

Commercial Fertilizers. By J. L. Hills et al. (Bulletin 166, pp. 243-320.)

This bulletin reports the results of analyses of fertilizers inspected during 1912, discusses the quantity and quality of the plant food in the brands of fertilizers of the current and preceding years, the relation between selling price and valuation, and gives a summary of the results of fertilizer inspection for the last five years.



